



IN THIS ISSUE



NEWS

- 4 Price Waterhouse signs up for 25,000 licenses of four Borland products.
- 5 Frito-Lay's IS chief heads to Perot Systems.
- 6 Citing spiraling administrative costs, health care leaders urge the adoption of an ELM standard for medical insurance claims by 1996.
- 6 In the same vein, a health care consortium is piloting a network that it hopes will cut administrative costs by up to 50%.
- 10 IBM responds to Compaq's pricing but acknowledges that price breaks may not be enough.
- 12 Several vendors announce object-oriented and relational databases, putting the two on a possible collision course.
- 14 Ken Olsen's legacy: Robert Palmer's challenge.
- 16 Motorola's new pager service combines satellite transmission and a pocket-size receiver to deliver E-mail to portable computers.
- 20 Proteon unveils a bridge/router in the \$5,000 to \$8,000 price range.
- 21 The Defense Department opens a Center for Software Reuse Operations.
- 21 Prime Computer will discontinue its hardware line immediately.

Quotable

"Forget about the VAX. Don't put any more money into that product line. Get on with open systems, PCs and Unix workstations."

EDISON DE CASTRO
DATA GENERAL

On what he would do in Robert Palmer's shoes at DEC.
See story page 14.

DESKTOP COMPUTING

- 45 Applications suites are changing the way companies do business.
- 48 Technology Analysis: Harvard Draw 1.0 and Windows Draw 3.0.

WORKGROUP COMPUTING

- 49 IBM teams up with Chipcom on superhubs.

ENTERPRISE NETWORKING

- 55 Managers are investing more heavily in network support.

LARGE SYSTEMS

- 63 Virginia power plant puts safety documents on-line for its 12,600 employees.

APPLICATION DEVELOPMENT

- 67 Many developers are waiting for the operating systems wars to shake out before pledging to OS/2 or Windows NT.

MANAGER'S JOURNAL

- 81 The Treasury Department is cashing in on an \$850 million deal to revamp its communications systems.

EXECUTIVE REPORT

- 71 It takes a lot more than unwrapping the package to make groupware work: Tips on how to stay sane.

IN DEPTH

- 75 Usability labs test to make sure applications developed in-house make sense from a user perspective. By Alice LaPlante.

DEPARTMENTS

- 6, 16 News Shorts
- 25 Advanced Technology
- 28 Editorial
- 82 Book Reviews
- 83 Computer Careers
- 91 Marketplace
- 96 Stocks
- 97 Computer Industry
- 98 Inside Lines

EXECUTIVE BRIEFING

■ Delta Air Lines might put OS/2 on the next plane out of town and instead go with Windows for a major development project — at least for the time being. The switch comes as Delta begins a revamp of its reservation system. The move still may not augur a corporatewide Windows strategy, however, as the airline struggles to sort out the issues. Page 1.

■ People and organizational concerns, not technology, pose the biggest obstacles to successful groupware implementations. Although workgroups often require expanded networking capabilities, early adopters and consultants say that getting different individuals and departments to cooperate remains a far bigger challenge. Page 71.

■ After spending tens of millions of dollars to develop a customer service application, IDS Financial found out what it had created was technically sound but hard to use. Today, IDS and other companies are relying on usability labs to ensure that software works the way users do. Page 75.

■ An unconventional licensing agreement between Borland and Price Waterhouse gives the accounting unit unlimited use of selected applications. Page 4.

■ With the end of the Unix wars, some people wonder if the OSF has a future. Sponsors say it does, if only because it gets the biggest vendors pulling in the same direction. OSF is now turning its attention to distributed computing technologies. Pages 1, 50 and 51.

■ A health care industry coalition and a subsidiary of pharmaceuticals giant McKesson Corp. join forces to pit information technology against escalating administration costs. Page 6.

■ IBM has cut price tags on its personal computer family by up to 30%, but analysts remain convinced that Big Blue needs to reassess its marketing and distribution strategies. Page 10.

■ Charles Feld, the IS chief who helped Frito-Lay figure out "where every bag of potato chips is," joins Perot Systems to run a new unit. Page 5.

■ Object-oriented and relational databases may draw closer as vendors bring out links between them. Page 12.

■ Rod Canion, Compaq Computer's founder, re-emphasizes with the formation of a business integration consultancy. Page 5.

■ DEC users suggest Robert Palmer, the company's new chief, pay more attention to marketing and communicating with customers. Page 14.

■ The Department of Defense opens its Center for Software Reuse Operations. The center provides access to 2.2 million lines of Cobol and Ada code in 1,531 reusable software modules. Page 21.

■ Biometric security devices and catching on as prices fall, offering computer managers a vast improvement over password protection. Page 25.

■ Network support costs have grown 20% a year since 1987 and show no signs of slowing as distributed computing makes things messier. Page 55.

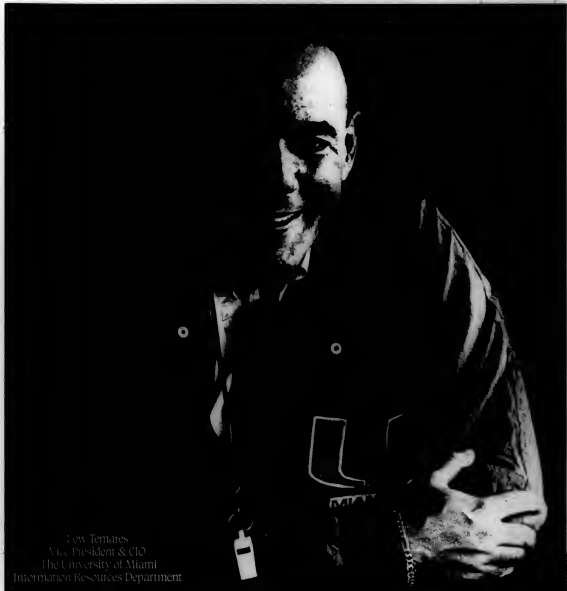
■ Windows NT mania isn't transferring to corporate software development groups just yet. Some users say they'll wait till the operating systems wars are settled. Page 67.

■ On site this week: Notebook computers help New York Life agents close the deal in the customer's living room. Page 45. A Virginia utility gets creative in holding down imaging costs, using fax machines instead of computers to deliver documents. Page 63. Maintenance and license fees drive a club operator's move from Unisys mainframes to Sun Microsystems servers. Page 64.

The 5th Wave



"HOW SHOULD I KNOW WHY THEY TOOK IT OFF THE LIST? MAYBE THERE JUST WEREN'T ENOUGH MEMBERS TO SUPPORT AN 'AIREDALES FOR ELVIS' BULLETIN BOARD."



Lew Temares
Vice President & CIO
The University of Miami
Information Resources Department

"Product quality. Technical excellence. Industrial-strength applications. Three simple reasons why Computer Associates has been my most important software vendor for more than 10 years."



CA's Computing
Architecture
For The 90's

Service and support. Financial stability. They all matter a lot. But ultimately, what matters the most is the quality of the software itself.

Which is why 95% of the Fortune 500 choose CA software. We invest more in R&D every week — \$4 million — than the average software company earns in a year. And it shows. In a world filled with software crashes, CA software is a shining example of reliability. They call it mission-critical software. And we agree.

To us, every mission is.

**COMPUTER
ASSOCIATES**
Software superior by design.

Borland offers twist on licensing fees

BY CHRISTOPHER LINDQUIST
and ROSEMARY HAMILTON
CW STAFF

In a move likely to intensify the already cutthroat competition among personal computer developers vying for corporate business, Borland International, Inc. last week announced a package deal that gives Price Waterhouse some 25,000 licenses for each of four Borland products.

The pact features a licensing agreement based on hardware equipment and unlimited use of selected applications. Price Waterhouse will pay a set fee—which one analyst estimated at around \$50 per package—to run Borland software on all computers at the company as well as an undisclosed license fee for each additional computer the company buys in the future, according to Sheldon Laube, national director of international technology at Price Waterhouse.

The company will then have the right to install any or all of the four packages—ObjectVision, dBase, Quattro Pro and Paradox—on its machines.

Neither Price Waterhouse nor Borland would comment on the fee schedule.

In addition, Price Waterhouse signed a multiyear maintenance agreement that gives it access to

all future upgrades.

The contract no doubt stings Lotus Development Corp., which has a long history with Price Waterhouse and a fierce rivalry with Borland. In addition to being a showcase account for Lotus' Notes—one of the first

Deciding factor

Q. What affects your company's software purchasing decisions most?

Price of software (40%)

Both (5%)



Source: CW Database Division

CW Chart Market Survey

Price Waterhouse is a 1-3-3 customer.

The deal effectively eliminates the headache of keeping track not only of the number of computers the financial services firm has but also the number of Borland licenses in use, who has them and where. Now, a single number will suffice.

"We needed a whole new way

of doing licensing," Laube said.

At issue was the necessity of some users to use a package on an infrequent basis. Under the old system, the user would have to "reflect the realities of the marketplace," which include the company's inability to get its Windows products out the door, according to a spokeswoman.

Borland's four business units are Paradox and the Paradox Engine, Applications (including Quattro Pro), Languages and Development Tools (dBase and ObjectVision, among others) and InterBase and Workgroup.

Previously, Borland was divided into three groups: Inter-

Base, Applications and Languages. The reshuffling, which was disclosed days after Borland reported a significant second-quarter earnings decline (see story page 97), creates smaller, more focused groups aimed at specific markets, according to a Borland spokeswoman.

"This [reorganization] may well be a near-term response to get the suckers out this put," said Neal Hill, a senior analyst at Forrester Research. "This puts things back in the hands of people who know them the best—[Rob] Dickerson with Paradox and [Steve] Kahn with Quattro Pro."

A tighter focus may be just what Borland needs at the moment as it begins to get into Microsoft Corp. Windows products moving and starts developing workgroup applications around its InterBase Engine in an attempt to present a unified strategy for corporate software buyers. However, while the reorganization may help stabilize the company, it also indicates that some problems did exist. "This is going to call into question the degree to which this is a stable \$500 million company," Hill said.

"They're casting about trying to find the right formula."

Shakin' things up

Borland has reorganized into four business units to "reflect the realities of the marketplace," which include the company's inability to get its Windows products out the door, according to a spokeswoman.

Borland's four business units are Paradox and the Paradox Engine, Applications (including Quattro Pro), Languages and Development Tools (dBase and ObjectVision, among others) and InterBase and Workgroup.

Previously, Borland was divided into three groups: InterBase, Applications and Languages. The reshuffling, which was disclosed days after Borland reported a significant second-quarter earnings decline (see story page 97), creates smaller, more focused groups aimed at specific markets, according to a Borland spokeswoman.

"This [reorganization] may well be a near-term response to get the suckers out this put," said Neal Hill, a senior analyst at Forrester Research. "This puts things back in the hands of people who know them the best—[Rob] Dickerson with Paradox and [Steve] Kahn with Quattro Pro."

A tighter focus may be just what Borland needs at the moment as it begins to get into Microsoft Corp. Windows products moving and starts developing workgroup applications around its InterBase Engine in an attempt to present a unified strategy for corporate software buyers. However, while the reorganization may help stabilize the company, it also indicates that some problems did exist. "This is going to call into question the degree to which this is a stable \$500 million company," Hill said.

"They're casting about trying to find the right formula."

CHRISTOPHER LINDQUIST and MARK HALPER

open the shades.

"Large-scale guerrilla warfare" is how Jim Geisman, president of Marketshare, Inc. in Wayland, Mass., described the move. However, he said, it remains to be seen how many similar purchases the deal will provoke. "This does put a mark on the wall, but how many people will reach up and touch it?"

Microsoft, UB form client/server duo

BY JOANNE M. WEXLER
CW STAFF

REDMOND, Wash. — Ungermann-Bass, Inc.'s (UB) announcement last week as a Microsoft Corp. strategic integrator could give Microsoft customers an in-the-know expert to help them forge ahead with client/server computing.

UB has long been a LAN Manager and SQL Server reseller; its newly elevated status in Interlock Microsoft operating

systems, client/server technology and training and support with UB's large-scale network integration expertise.

The deal is also aimed at fueling UB's enigmatic server-in-a-hub concept — a scheme that both Microsoft and Novell, Inc. have committed to support — for integrated, centralized server management. The agreement assures customers already considering bundling Microsoft operating systems into their hubs that the UB platform will also

support future Microsoft technology.

The strategy has drawn supporters and skeptics alike. Some lauded the merits of blending computing and communications management under one umbrella; others were uneasy with servers residing in an inaccessible, locked wiring closet that is tended by cabling personnel.

Even UB hub customer Microsoft is "on the fence" about whether it will be beneficial in its network, said Dave Lowmeyer, Microsoft's senior manager of corporate networking.

However, the fortified Microsoft/UB relationship should give Microsoft customers something to turn to for help with constructing and administering heterogeneous, distributed network infrastructures that will carry Microsoft's LAN Manager, SQL Server, Windows NT Technology (NT) and LAN Manager for Windows NT network applications.

Users shifting to widely distributed enterprises are facing dilemmas with decentralized administration and support, which will "have to be addressed in any

changes we make to our network," said Michael Purcell, staff software engineer at LAN Manager shop Baxter Healthcare Corp., based in Deerfield, Ill.

The Baxter network currently consists largely of stand-alone local-area networks, which the firm is looking to interconnect.

Fixing the glitches

In blending the network application and transport worlds, "a number of issues can come up," UB President Ralph Ungermann explained. For example, he said, an organization running many different kinds of printers might need help in getting LAN Manager applications to interoperate with all of them.

Microsoft's internal network has itself benefited from some UB integration services. For example, Microsoft runs a UB-designed version of the XNS communications protocol that has been specifically optimized for use with the network operating system, Linowebster said.

Microsoft also has integrator alliances with Digital Equipment Corp. and other firms, although the software giant "doesn't have this type of relationship with any other hub vendor," said Nick

Lapps, president of Strategic Networks Consulting, Inc. in Rockland, Mass. Moreover, hubs are becoming cornerstone devices on which many corporate networks are being founded.

Other hub companies, such as market leader Cabletron Systems, Inc., are taking on integrator roles, although most are serving more as a single sales source for network equipment than as an integrator of applications and networks. However, hub maker Network, Inc., which is half-owned by UB, has a close-knit relationship with Novell that is akin to the Microsoft/UB alliance and thus provides UB inroads into the two largest LAN installed bases.

On the table

Companies implementing client/server computing via LAN Manager are the primary beneficiaries of the Microsoft/Ungermann-Bass alliance, which includes the following characteristics:

- Current and future Microsoft operating systems, client/server technology and training and support to partner with UB's large-scale network integration expertise and support.
- UB to distribute future LAN Manager and Windows NT products.
- UB to support current and future Microsoft technology in its wiring hubs and under its management system.
- UB to participate in Microsoft technology planning.

SELL MORE PRODUCT.

Advertise in Computerworld's Product Showcase. It works.

800-343-6474
x744

Frito's Feld joins Perot Systems

Former IS chief will run business unit to help companies use information

BY MARK HALPER
CW STAFF

HERNDON, Va. — The information systems chief who helped Frito-Lay, Inc. figure out "where every bag of potato chips is" joined Perot Systems Corp. last week to run a new unit charged with helping businesses exploit information.

Charles Feld, who is credited with transforming Frito-Lay's IS group into a strategic operation that uses sophisticated databases to track product and detect

regional consumer patterns, was named vice president. He will report to Perot President Pat Horner.

Feld, who served as vice president of management information at Frito-Lay, left the Dallas-based snack food maker earlier this year to form his own consulting group, the Feld Group, which Perot has absorbed. Financial terms were not disclosed.

Perot Chairman Mort Meyerson said Feld will help form a new group within the company that will aid businesses in imple-

menting the types of changes that Feld brought to Frito-Lay.

Lessons learned

Under Feld's tutelage, Frito-Lay implemented relational database management systems that enabled it to keep a tight control on inventory and to map out regional business plans, altering promotions and brand names to suit different



"Perot's Feld put in charge of 'urban renewal'"

market preferences.

"You can take your computing power and use it for marketing and distribution, which is what Charlie did at Frito," Meyerson said.

Feld last week described his mission as "urban renewal," noting that corporations need to move away from mainframe computing toward more distributed client/server technology.

"They have to start knocking buildings down new ones up," Feld said.

Canion forms consultancy

BY CAROL HILDEBRAND
CW STAFF

HOUSTON — Joseph R. "Rod" Canion, former Compaq Computer Corp. co-founder and chief executive officer, resurfaced last week with the formation of a business integration consultancy.

Speaking at a press briefing, Canion said Insource Management Group will help businesses regain their competitive edge, or what he calls "business fitness." His said its mission is to help clients rethink and redesign how they operate by integrating their business strategy and processes with information systems.

Funded by a \$1 million investment — split by Canion and Compaq co-founder James Harris — the company will compete with outsourcing giants such as Electronic Data Systems Corp. and Andersen Consulting.

According to Canion, Insource Management hopes to build long-term client relationships that involve the following three phases:

- First, a team of client and Insource Management staff evaluates the business processes to ensure that they tie in to the company's overall vision.

- Second, the new processes are implemented using appropriate technology.

- Third, the client is trained to manage the new environment and keep abreast of change.

As chairman, Canion carries with him the experience of guiding Compaq through its tumultuous growth years and of being ousted from that same company when he failed to react quickly enough to a rapidly changing market.

President and CEO of Insource Management is Ronald L. Fischer, an EDS executive who was most recently general manager of Perot Systems Corp., a systems integration company headed by Ross Perot. Harris is the final member of the new company's board. The firm has about 10 employees.

INNOVATION DATA PROCESSING

Announce

EDR REORG

IAM

FATS

COMPACTOR

FATAR

ABR

DSF

| | ELAPSED | CPU | FCPU |
|------------|---------|--------|--------|
| FDR REORG | 0.64M | 2.97S | 328 |
| SYSLINKLIB | IBECOPY | 7.50M | 60.51S |
| | SAVINGS | -91.5% | 95.1% |
| | | | 98.4% |

20

NEWS SHORTS

Job stress, keyboard woes linked

A federal study of 533 telephone operators at US West confirmed a link between job stress and the epidemic of hand, wrist, arm and neck injuries from intensive keyboard work. The National Institute for Occupational Safety and Health said 22% of the workers had medically verified injuries. The injuries cropped up mostly among those who feared losing their jobs, faced increased work loads, lacked job diversity and authority and were subjected to electronic performance monitoring.

D&B to shutter Amps help center

Dun & Bradstreet Software plans to close a service and support facility in Eagan, Minn., used by companies running Amps, a mainframe-based manufacturing application. Service functions performed by the 70-member staff will be transferred to an Atlanta office by December, a spokesman said. Approximately 10 workers will be offered positions in Atlanta or at D&B Software's Framingham, Mass., office. The others will be offered severance, he added. The move will save the firm an undisclosed amount of money, but it is part of an effort to de-emphasize resources spent on building host-based software in favor of client/server applications, he said.

Object DBMS heart of repository

Verant Object Technology Corp. in Menlo Park, Calif., said last week that its Verant object database management system was the product being used by IBM as the foundation for its AD/Cycle Repository for personal computers running OS/2 and RISC Systems/6000 workstations running AIX (CW, July 20). Previously, only MVS systems with IBM's DB2 relational database hosted the Repository Manager. Earlier this year, IBM and Verant had agreed to use the Verant database for IBM's AIX computer-aided software engineering framework offering, said David Gilmore, executive vice president of marketing at Verant.

Unisys wins Ferro outsourcing pact

Unisys Corp. announced last week that it has won a \$13 million outsourcing contract with Ferro AB of Sweden, a group of companies that supply professional and consumer hardware goods. Under the five-year deal, Unisys will buy back and operate Unisys computers at the customer site in Allingsås, Sweden. Unisys also will repurchase three of its 2200/400 mainframe computers from Ferro and hire Ferro's information systems staff during a 60-day transition period, which began this month. Ferro will retain its in-house software development staff. Ferro estimated the outsourcing pact will save between \$3.3 million and \$4.9 million over five years.

EDS extends pact with Enron

Electronic Data Systems Corp. last week signed a three-year outsourcing contract extension with Enron Corp. and also took a 3% stake in the company. The new agreement prolongs the original 1989 contract through 2001 and adds roughly \$180 million to the value. Analysts have estimated the size of the original 10-year deal at about \$750 million. EDS spent \$149.5 million for 3.5 million shares in the \$13.5 billion Houston-based natural gas and oil company.

Short takes

Recapitalization discussions among Encore Computer Corp., Gould, Inc., and Gould's Japanese parent, Nippon Mining Co., aimed at an equity infusion for Encore continued last week. ... IBM Senior Vice President David McKinney, a 36-year veteran, will retire from the firm as of Friday. ... Greg Carroll, executive director at Washington, D.C.-based The Computer Leasing & Remarketing Association (CDLA), will officially step up to the CDLA presidency as of this Saturday. He succeeds Kenneth A. Bouldin. ... Frank King, former Lotus Development Corp. executive, has surfaced as a member of the board of directors at Escalibur Technologies Corp., a maker of document imaging systems.

More news shorts on page 16

Team fights rising medical costs

Will build on-line system that could cut administrative expenses by 50%

BY NELL MARGOLIS
CHICAGO

A health care industry coalition and an information technology subsidiary of \$10.3 billion pharmaceuticals giant McKesson Corp. last week joined forces to pit information technology against escalating health care administration costs.

The Health Care Information Network (HCIN), expected to debut by mid-1993 after a several-month pilot program, weds the National Electronic Information Corp.'s (NEIC) vast insurance claims network to prescription drug management software developed by McKesson subsidiary PCS, Inc. The partnership creates a real-time, on-line system for routing a broad slate of managed health care transactions nationwide.

The network will "virtually eliminate paperwork and phone calls" between health care providers, customers and product vendors, claimed Kenneth J. O'Donnell, chief executive officer at NEIC, a Secaucus, N.J.-based managed care professional consortium.

NEIC's 330-vendor member network serves 100,000-plus provider subscribers to account for the health insurance coverage of 85 million people in the U.S.

Health care administrative costs have spiraled to an esti-

mated \$80 billion a year, said Joseph T. Brophy, president of The Travelers Insurance Co. in Hartford, Conn., an NEIC member and longtime activist in the health care technology arena. HCIN could reduce that figure by as much as 50%, he added.

HCIN is "a truly significant step" in the battle to control health care costs, said Brophy, who is also co-chairman of the industry's Workgroup for Electronic Data Interchange (WEDI), which last week called for nationwide adoption of the ANSI X12 electronic data interchange standard for insurance claims and billing by 1996 (see story below).

Software to the rescue

"For 10 years, NEIC has been in the business of moving claims" across its public utility network," said Gerald Mannin, vice president of group health at NEIC member Metropolitan Life Insurance Co. "Now, with the PCS software, it will also be able to move other managed care information—for instance, eligibility requirements, authorizations and referrals."

Brophy said not to discount HCIN's importance on the basis of its restriction to administrative rather than clinical issues.

"Just eliminating postage could reduce health care costs by \$4 billion to \$10 billion a year," he said. "Electronic [claims] sub-

mission could save \$20 billion, \$30 billion, \$40 billion a year, \$50 billion."

"Hassle-free," instantaneous transmission of vital claims, patient eligibility, treatment authorization and referral information, O'Donnell said, will wipe out costly and sometimes dangerous delays and omissions.

The network bears no guarantee that the dramatic cost savings will be passed along to patients, several executives involved with the HCIN initiative said. However, they said, such trickling down is expected.

Phoenix-based prescription drug payment manager PCS won the hotly contested bid to be NEIC's technology partner on the HCIN project, beating out Electronic Data Systems Corp. and IBM subsidiary Integrated Systems Solutions Corp. largely on the strength of technology and timing, O'Donnell said.

"EDS is a very large and powerful company [with] a great deal of health care expertise," he said. "So is IBM. But PCS had an on-line, real-time network [tailored to] the pharmacy marketplace, so we chose that. There was simply less to develop."

Some 52,000 U.S. pharmacies (approximately 94% of the market) are linked across PCS' Recap network, a 24-hour, seven-day system with extensive emergency backup and storage. McKesson and NEIC said.

Health care leaders boost campaign for EDI

BY MITCH BETTS
CHICAGO

WASHINGTON, D.C. — Lead-

ers of the health care industry last week launched an aggressive campaign to cut \$4 billion to \$10 billion in paperwork and administrative costs by using electronic data interchange (EDI) and uniform data elements.

The sweeping recommendations, made by an industry task force and supported by the federal government, call for nationwide adoption of the ANSI X12 EDI standard for insurance claims and billing by 1996.

"We're going to have one standard to replace more than

400 different computer formats," said Joseph T. Brophy, president of The Travelers Insurance Co. in Hartford, Conn., and co-chairman of the industry's Workgroup for Electronic Data Interchange.

The task force report urges the big players in the industry—such as Medicare, major private insurers, employers and large clinics—to lead the charge by the fourth quarter of 1994, while smaller firms and doctors' offices are given until 1996.

Analysts said the challenge is to get the nation's 6,000 hospitals and 600,000 physicians on board and to figure out who will pay for the transition from pro-

prietary systems to X12 systems.

John Glaser, vice president of information systems at Brigham and Women's Hospital in Boston, praised the initiative, especially the insurance industry's effort to settle on a uniform set of data elements.

"It's a real pain for us to keep track of a couple dozen health insurance formats," he said.

Full compliance

Gleason Hills hospitals can migrate to X12 as fast as third-party vendors upgrade their software packages. But, he said it may take a legislative fiat to get 100% compliance throughout the health care industry.

Those hospitals that already use EDI have reduced the turnaround time for submitting claims and receiving payments from an average of 80 days to just two or three days, according to researchers at Input, Inc. in Mountain View, Calif.

The EDI initiative has widespread support in the health care industry, including the national Blue Cross/Blue Cross Association, the American Hospital Association and the American Medical Association.



Travelers' Brophy: One standard will replace 400 computer formats.

**WHAT HAVE
BILL GATES,
SCOTT MCNEALY,
JOHN SCULLEY,
JOHN YOUNG
AND LARRY ELLISON
AGREED TO
COOPERATE ON?**

Regional banks form ATM network

Electronic Payment Services, Inc. will link 1,400 banks with 13,000 ATMs in 16 states

BY THOMAS HOFFMAN
CIVILIAN

NEW YORK — Four of the biggest U.S. regional banking companies last week signed a definitive agreement to form one of the largest electronic payment and automated teller machine (ATM) networks in the country.

The cooperative venture — which will link the ATMs and point-of-sale (POS) networks of CoreStates Financial Corp., PNC Financial Corp., Banc One Corp. and

Society Corp. — is expected to help the member banks reduce their operating costs significantly through the joint sharing of technology. No estimates are available yet on the anticipated savings, although the cooperative is expected to have annual revenue exceeding \$200 million with approximately 600 employees.

The venture, Electronic Payment Services, Inc. (EPS), will be finalized in November, pending approval by the Federal Reserve Board. The banks are planning to link their networks together "some"

time in 1993," a spokesman for Society said.

EPS will initially represent 1,400 financial institutions with 13,000 ATMs in 16 states, although most of the ATMs are located in Pennsylvania and the Ohio Valley. The company, which will be based in Delaware, will be the largest processor of ATM transactions in the U.S., processing an estimated 1 billion transactions per year.

That includes roughly 20% of the national switch volume, or 730 million

"switch" transactions, which occur when customers use ATMs other than the ones owned by the bank that issued their ATM card. There are roughly 90,000 ATMs across the U.S., which process about 6.6 billion transactions annually. In addition, EPS is expected to process more than 650 million electronic POS transactions annually through 150,000 POS terminals used by retailers nationwide.

Banking on an idea

Douglas Teixeira, a partner at Ernst & Young in Boston, said the deal is significant in the banking industry because this is the first venture involving four major regional banking companies.

EPS solves major strategic problems for its founders, particularly CoreStates, Teixeira said. CoreStates was the sole owner of the Money Access Service, Inc. (MAS) network, which, although profitable, had trouble expanding because other banks were reluctant to join a network of only one bank.

However, the integration of these wholly owned ATM networks should enable CoreStates and its partners to dramatically reduce their operating costs, Teixeira said, especially because switching software no longer has to be duplicated.

Strong POS growth will also aid EPS' future, Teixeira said. Retailers have recently begun using POS terminals that accept plastic ATM cards at checkout counters for debit payments in addition to cash, credit cards and checks.

Although the use of ATM cards to automatically deduct purchases from a consumer's bank account is more common in the Western states than on the East Coast, Teixeira said, its adoption by retailers in the East is expected to grow. In fact, the New York Cash Exchange (NYCE) Network has grown to 8,800 POS terminals from only 1,400 last year, said Joan Savarese, vice president of marketing at the NYCE Network.

NYCE Network was formed a few years ago by The Chase Manhattan Bank NA and Chemical Banking Corp., but that venture included nine owners and dozens of smaller partners who are part-owners, Teixeira said. NYCE annually processes \$40 million transactions over 10,000 ATMs.

Regional contributions

Savarese said the EPS alliance will not directly impact NYCE because NYCE primarily consists of banks and ATMs in New York and New England.

Philadelphia-based CoreStates will be the leading investor, contributing its MAS ATM network and its wholly owned subsidiary, Bypass Corp., an Atlanta-based processor of electronic POS transactions. Banc One, based in Columbus, Ohio, will contribute its Jubilee ATM network and its POS business. Pittsburgh-based PNC will add its Trinet ATM network, its Owl ATM network and its POS business while Cleveland-based Society will integrate its Green Machine Network Corp. and its POS business.

PNC, CoreStates and Banc One will each own a 31% stake in EPS, while Society will own 7%. CoreStates will receive a cash payment of \$78 million from PNC and Banc One. \$2.5 million in preferred stock and dividends tied to the earnings of the new company. With those payments, CoreStates expects to turn a \$23 million profit while increasing capital by \$100 million.

"CA-Realia COBOL Achieved The Highest Overall Rating"

- ✓ Quality Of Technical Support
- ✓ Clean Code Production
- ✓ Ability To Increase Programmer Productivity
- ✓ Responsiveness Of Vendor Service
- ✓ Speed
- ✓ Overall Ease Of Use
- ✓ Training Required To Use Product
- ✓ Costs vs Benefits Provided By Product
- ✓ Ease Of Installation

We won.

That's what the most recent Computerworld Buyer's Scorecard of COBOL Software said: CA-Realia COBOL is the highest-rated COBOL solution available.

Not Micro Focus. Or RM/COBOL. In fact, no other COBOL software could match CA-Realia COBOL's overall ease of use and technical superiority in compiling and debugging large system applications.

But you be the judge.

Call 1-800-CALL-CA today for more information on CA-Realia COBOL and the scorecard article. With COBOL software this good, you win.

**COMPUTER
ASSOCIATES**
Software superior by design.

CA-Realia COBOL CA-Realia CICS CA-Realia IMS CA-Realia DL/I CA-Realia 370

© Computer Associates International, Inc. One Computer Associates Plaza, Bala Cynwyd, PA 19004. 1992 product names referenced herein are trademarks of their respective companies. C-1992-01 Publishing, Inc. Englewood, CO 80150

A COOPERATIVE-SERVER DATABASE FROM ORACLE

The world's largest database company introduces a revolutionary new technology called a cooperative-server database. A cooperative-server database hides the complexity of computer networks by enabling applications to access data located on multiple computers just as if all the data were stored on a single computer. In this way, a cooperative-server database simplifies application building and improves decision making by making access to information easier...much easier.



*Bill Gates
Chairman and CEO
Microsoft Corporation*

"Oracle's always been the leader in building database technology. One of the great things about Oracle's approach is that they're hiding the differences between all the machines out on the network running on various platforms."

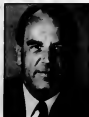
"ORACLE7's breakthrough in fitting technological complexity is analogous to the ease-of-use breakthroughs accomplished by the introduction of the Mac in 1984."

*John Sculley
Chairman and CEO
Apple Computer, Inc.*



"The fundamental problem with early client-server database management systems is that applications cannot access data on more than one server without a lot of extra programming. This programmatic approach to accessing data on multiple servers is in stark contrast to the totally automatic approach provided by ORACLE7."

*Larry Ellison
President and CEO
Oracle Corporation*



"With HP systems and ORACLE7, our customers will have the desktop to high-end performance they need for a fraction of the cost of mainframe computing solutions."

*John Young
President and CEO
Hewlett-Packard Company*



"ORACLE7 is really solving the complexities of the distributed computing environment cost-effectively. Plus, it supplies the reliability and security that are required in a distributed computing environment. In fact, because ORACLE7 matches Sun's client-server model so well, we have chosen ORACLE7 as one of our key databases."

*Scott G. McNealy
President, CEO and Chairman
Sun Microsystems, Inc.*

For more on ORACLE7, just call 1-800-633-7071 Ext. 8180. Find out what these industry leaders are excited about.

ORACLE

Software that runs on all your computers.

IBM (finally) cuts PC prices

Lower tags a start, but Big Blue needs to reassess marketing, distribution

BY CAROL HILDEBRAND
COLUMBIA

WHITE PLAINS, N.Y. — IBM finally joined the throng of personal computer vendors responding to Compaq Computer Corp.'s inflammatory pricing flag, but analysts cautioned that

the industry giant will also have to provide new product lines and explore different distribution approaches to retain market share.

"I don't think price is enough," said Sam Albert, president of San Albert Associates in Scarborough, N.Y. "It's a very real statistic, but there are other crit-

ical success factors like distribution, marketing and support."

Peter Reilly, director of Personal Systems marketing at IBM's National Distribution Division, acknowledged that the firm has a ways to go. While saying that the 25% to 30% price cuts, coupled with the company's 486SLC2 upgrade offer of \$259, bring the firm up to par with Compaq, he noted, "I can't cover three product lines with one. We clearly have some holes in our product lines."

Pros and cons

Some users applauded the pricing moves. Joe King, assistant vice president of client support services at Continental Insurance Co. in Neptune, N.J., said that between the discounts he gets from his dealer and the ones he gets from IBM, the price puts the IBM boxes in a very competitive price range.

His firm is standardized on the Personal System/2 Models 56 and 57, "and with the combination of those two discounts, the 56 and 57 boxes are very competitive with Compaq offerings," he said.

King also lauded the 8M bytes

A little off the top

IBM aggressively cut the price of its PS/2 line up to 30%.

Some examples are:

| Model | Old Price | New Price | Configuration |
|-------------|-----------|-----------|---|
| 56 SLC-050 | \$4,000 | \$3,025 | 704Mb; 384K; 8M bytes RAM; 1.44M byte disk drive; 1600dpi hard drive |
| 57 SLC-050 | \$4,495 | \$3,340 | 704Mb; 384K; 8M bytes RAM; 2.88M byte disk drive; 1600dpi hard drive |
| 95 SLC-050 | \$11,295 | \$8,915 | 754Mb; 484K; 8M bytes RAM; 1.44M byte disk drive; 4000dpi hard drive |
| N51 SLC-025 | \$3,145 | \$2,355 | 1600dpi; 384K; 8M bytes RAM; 1.44M byte disk drive; 800dpi hard drive |

of random-access memory now standard on those PCs. "We were expecting a low-cost upgrade, and they made it free; it's very good news," he said.

However, the price cuts came too late for other users. Enrique Crespo Jr., manager of user computing services at Torrington Co. in Torrington, Conn., explained, "By the time IBM brought prices down to our level, we had a whole population of other machines. We don't want to start out with new hardware." He cited investments in maintenance, training and spare parts as factors.

IBM has other plans, but Reilly did not comment on the reported September launch of an entry-level product line. "We need to have a brand of products that are more industry-standard," he said, agreeing that the

XT/AT bus would be an industry standard. "Clearly, there is work yet to be done."

He also acknowledged that the company has a long way to go in broadening its distribution lines. Although he swore allegiance to the dealer channel, he said the company would expand. "Our stated strategy is to get into enough distribution channels to satisfy all segments, and we're not there yet," he said.

Reilly said the company was about to ship its first mail-order catalog, and IBM customers would eventually be able to order PCs via an 800 number. The company is currently plotting such a number with OS/2. However, he denied reports that the non-IBM brand name Amira PC series — currently available in Europe, Canada and the U.S. — would be available in the U.S.

Playing leapfrog

A IBM slashed prices across its PC line. Advanced Logic Research, Inc. (ALR) lopped 22% to 33% off its line of Intel Corp. 1486-based Ranger notebooks, which hit the shelves a scant six months ago.

"We want to make a stance in the high-end notebook business," said David Kirkey, ALR's vice president of marketing. "We think we entered the market with what prices are going to be six months down the road."

ALR typically offers one of the lowest prices on 486 products and is betting its notebook strategy on the 486 platform. The price of a monochrome 25-MHz 486 system with a 60M-byte hard drive was cut 32%, to \$2,495. A similarly configured color notebook was reduced 22%, to \$3,495. Kirkey said a 486DX/25 notebook, priced at \$2,995, was 27% less than a comparable Toshiba America Information Systems, Inc. T4400 DX configuration, which is priced at \$4,098.

CAROL HILDEBRAND

P5 chip delay does not vex Intel users

CONTINUED FROM PAGE 1

basic chip building blocks, the spokeswoman explained.

"I think the market is doing very well with 486DX2, so there's not a pressing need for a new chip," said Michael Slater, editor of "The Microprocessor Report," a Sebastopol, Calif.-based newsletter. "Having accomplished the strategy of convincing the industry that they will have something that will compete with high-end [RISC] chips, they can take a leisurely pace and make sure that they have it all right."

While most personal computer vendors would not comment on the delay, few seemed perturbed. Intel's spokeswoman confirmed that numerous vendors would demonstrate their PS2s at Comdex.

Another advantage to waiting is continued debugging. Dean McCarron, director of technology at Scottsdale, Ariz.-based In-Stat, Inc., added that with such a complex chip, it is difficult to get the early test runs to yield an acceptable ratio of good chips.

"With a bigger processor, there's more room for mistakes," he explained.

Users and analysts both said

it would be worth waiting a couple of months to avoid a debacle like the 486/50-MHz debut, where several vendors shipped PCs before discovering bugs in the chip.

"We'd be happier to see them go through all their quality-control measures first than have it a couple of months earlier," said Bill Lodge, a project leader at Turner Corp. in New York, Lodge, whose company moved off mainframes to a networked PC environment, got caught in the crunch caused by the 50-MHz 486 chip, which had some heat-dissipation problems.

Others, only now moving onto the 486 line, were not especially put out by a several-month delay on a high-end chip.

"I don't think it will have any major impact on us," said Glenn Soudsky, chief information officer at Miller Mason & Dickenson in Chicago. "We don't have any overwhelming need for the 586 right now." He said it might be something to look into in the future as he gets larger clients.

Jeff Newman, assistant vice president at Barclays Bank PLC in New York, said that although he couldn't wait to see a P5-

based PC, he plans to wait till the chip goes down in price before buying. The delay "doesn't affect me either way because the PCs will be too high-priced at the beginning," he said. "I now would have to wait a dozen times before I spent more than \$4,000 on machines."

The P5, which Intel estimated will initially run at about 100 million instructions per second, is the company's first supercomputer processor, which essentially means that the chip will be able to perform multiple tasks simultaneously. It has 3.5 million transistors — more than double that of the 486. The chip will run on the 486-based instruction set computing (RISC)-based core — an answer to charges that Intel processors could not keep up with high-end RISC chips.

The company reved up the PS2 production cycle to quell speculation that RISC chips would outperform the Intel competition, and most analysts said this delay will not affect the mid-size Intel line that has garnered from the move.

"Intel has a \$30 million a year market. None of the RISC guys is even close to that," McCarron said. "Intel clearly has reason to be concerned. However, considering [IT] current position, they are dominating the market."

Still, competitors such as Cyrix, Inc. and Advanced Micro Devices, Inc. might not see some short-term gains from the delay, analysts said.

IBM ponders PC spin-off

CONTINUED FROM PAGE 1

firmed that discussions are under way but said a final decision has not yet been reached.

Operating as a separate subsidiary would rid the division of corporate overhead and enable it to more effectively control marketing, sales and distribution — activities that are currently tied in with mainstream IBM. The

"They'll be building their own bureaucracy. They have to watch their cost structure so things don't get out of hand," Druback said.

"I think they are finally going to compete against the clones, but they've got to shut off all of their overhead," said Steven Fisher, president of Canaan Associates, Inc. and a 27-year IBM veteran.

Although details of the discussions remain unclear, most observers said they picture the personal computer subsidiary evolving into several operating units within the division: One would sell high-end systems through dealers, and another — a low-end group — would move products through commodity channels such as mail order and supermarkets.

Gaining sales control brings up the issue of having multiple IBM salesmen banging on the information systems door, but sources said that a great deal of product will be wholesaled back to IBM Sales and Marketing for sales through that channel.

Disclosure of the spin-off is expected as early as mid-September, which could coincide with or slightly precede the launch of IBM's new low-end PC family, slated for a Sep. 22 unveiling, sources said.

THEY'LL BE building their own bureaucracy. They have to watch their cost structure so things don't get out of hand."

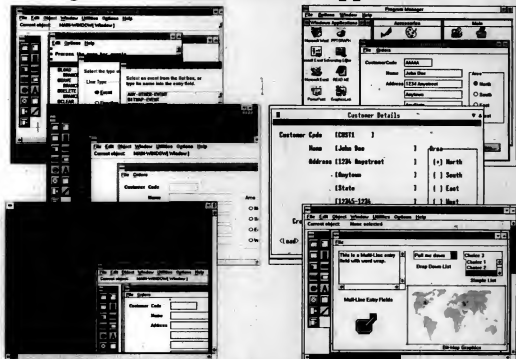
FRANK DRUBACK
COMMUNICATIONS
NETWORK ARCHITECTS

subsidiary would most likely be managed by James Canavanna, general manager of IBM's Personal Systems Division.

Frank Druback, a consultant at Communications Network Architects, Inc. in Washington, D.C., said the move would give Canavanna and others much more leeway in their ability to do things such as moving manufacturing, but negatives do exist.

Bring GUIs to Your COBOL Applications

Save
\$500 in July



...And Keep Your Interface Options Open With Micro Focus Dialog System 2.1™

Dialog System makes it possible to prototype and customize graphical user interfaces without learning complicated Application Programming Interfaces (APIs). Programmers familiar with COBOL can be up and running quickly with Dialog System.

And which "industry standard" user interface will best suit the end users at your site? Will it be Microsoft® Windows™? OS/2® Presentation Manager™? OSF/Motif™? Or perhaps character-mode interfaces for DOS and UNIX®?

When you develop user interfaces with Dialog System, it doesn't matter, because a single user interface can be portable across all these environments.

Dialog System supports "point and click" development of graphical and character-based user interfaces. It isolates screen and keyboard logic

from COBOL applications, replacing hundreds of lines of screen definition code with a simple CALL statement. That means smaller, faster and more reusable COBOL programs.

Dialog System user interfaces can be prototyped, developed and updated without impacting the application logic. When a prototype interface is completed, it can be put directly into production without any additional development.

Bring the excitement of GUIs to your COBOL applications with Micro Focus COBOL and Dialog System.

Call today. Take advantage of the special price on Dialog System and save \$500. Call Micro Focus at 800-872-6265.



MICRO FOCUS

Micro Focus Inc., 2465 East Bayshore Road, Palo Alto, CA 94303 Tel (415) 856-4161

Micro Focus GSA Contract Number GS00K90AGS5251-PS02.

Micro Focus is a registered trademark of Micro Focus. Dialog System and "A Better Way of Programming" are trademarks of Micro Focus. Microsoft is a registered trademark of Microsoft Corporation. Windows is a trademark of Microsoft Corporation. OS/2 and OS/2 are registered trademarks of International Business Machines Corporation. Presentation Manager is a trademark of International Business Machines Corporation. OS/2 is a trademark of International Business Machines Corporation. UNIX is a registered trademark of AT&T System Laboratories Inc.

First links between object, relational databases forged

Vendors announce partnerships, tools to bridge architectural gaps

BY JEAN S. BOZMAN
CW1007

SAN FRANCISCO—Object databases are on a collision course with relational databases.

Users and vendors at last week's Object World show said the two technologies are destined to meet in the mid-1990s, even though object-oriented databases hold different types of data than relational databases, and the two are architecturally isolated because there have been no interfaces between them. That is about to change, however, as several firms announced links between object-oriented databases and relational systems last week:

• **Hewlett-Packard Co.** in Palo Alto, Calif., said its OpenODB object database, which shipped in December, will be linked to the Informix OnLine relational database from Informix Software, Inc. in Menlo Park, Calif.

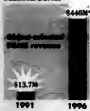
Under a cross-licensing deal, OpenODB objects will be stored inside the relational database and accessed through HP's Object SQL interface. Informix will also adapt its 4GL++ tool, which has object-oriented extensions, so it can write applications for OpenODB. The OpenODB product already works with HP's Alliance/SQL relational database.

• **Digital Equipment Corp.** announced its own object-oriented database, called DEC Ob-

ject/DB Version 1.0. The product, which is slated to ship in September, is based on an object-oriented database made by Objectivity, Inc. in Menlo Park, Calif. DEC will sell and support Object/DB and provide

Object of desire

Object-oriented DBMS readers can expect substantial growth if they can provide the capabilities of traditional DBMSs



Source: International Data Corp.

software tools to create applications that will link the object database to RDB.

• **Object Design, Inc.** in Burlington, Mass., and **Progress Software Corp.** in Bedford, Mass., signed a joint development and marketing agreement under which Object Design's ObjectStore object-oriented database management system will be linked to the Progress 4GL fourth-generation language, which is used to write relational database applications. Products

are scheduled to undergo beta tests in the fourth quarter and ship in the first quarter of 1993.

• **Servio Corp.** started shipping Release 3.0 of its GemStone object database, which contains links to Sybase, Inc.'s SQL Server relational database system. Servio's GeoIDE development tools are used to construct object-oriented applications.

Industry analysts said such partnerships are inevitable, given the small size of most object-oriented database vendors and the requirement to link object-oriented products to the existing information systems infrastructure. The leaves object database firms with very few choices, said Donald Feinberg, a senior software analyst at Gartner Group, Inc. in Stamford, Conn.

"They are either going to form an alliance with the RDBMS vendors, be bought out by them or go out of business," Feinberg said.

Newcomers to object-oriented systems are drawn to their strongest selling points: reusability of objects, reduced development time and the freedom to associate any two objects without complex indexing schemes. But object databases have existed in a vacuum, set apart by unique data-access methods and special software tools.

If the gap between object databases and relational databases were bridged with similar data-access methods, IS developers could draw on a rich set of data

from both database structures for complex applications.

"We see the benefits of using object-oriented technology to build new applications, since our Cobol systems are very old," said Mike Blask, an IS administrator at the Maricopa County Health Services Agency in Phoenix.

But there is a need to share data with departments that have relational databases, Blask said. "We probably would not be able to go to object-oriented technology if those links to older systems didn't exist."

But some users questioned whether the links between object databases and relational databases are really needed, even if they will soon be available. They said the stuff of which object-oriented databases are made—everything from geometric data to multimedia images to engineering drawings—cannot be jammed into the up-and-down, left-and-right rows and columns of relational databases.

"It's like chalk and cheese, to quote an English phrase," said Cecil Bloch, a senior analyst at the Research Libraries Group, Inc. in Mountain View, Calif., which builds library systems with object-oriented software. "Object databases and relational databases are inherently differ-

ent. The only reason there has to be continuity is that the relational database component don't want to rebuild everything."

Although partnerships between object-oriented firms and relational database firms are new, they are likely to multiply in coming years. Oracle Corp. is reportedly looking for partners to add object-oriented features

PARTNERSHIPS ARE inevitable, given the small size of most object-oriented databases vendors and the requirement to link object-oriented products to the existing IS infrastructure.

to its Oracle 7 database release. The Ask Co.'s Ingres Products Division recently announced a partnership with ESL, Inc. in Sunnyvale, Calif., to store ESL's class library of multidimensional objects inside the Ingres relational database. And industry analysts predicted that HP will soon license OpenODB to other RDBMS vendors.

Three lessons in objectivity

The leading lights of the personal computer industry traded barbs at last week's Object World over who would incorporate object-oriented features first.

Jim Allchin, Microsoft Corp.'s vice president of advanced systems, joined Barlind International, Inc. Chief Executive Officer Philippe Kahn and Next, Inc. CEO Steve Jobs in a three-hour show-and-tell demonstration of object features found in the trio's current and future products.

Microsoft was criticized by Kahn and Jobs for failing to join enough object-oriented features into the current release of Windows 3.1, a new mind the first release of Windows New Technology (NT). Allchin countered that Microsoft's Object Linking and Embedding (OLE) protocol is being enhanced, while the Microsoft Object Manager for handling system resources is hidden in the kernel of NT.

Allchin also claimed Microsoft's object solution would be more cost-effective than Next's. "Steve showed all the things I showed," he said, "but I showed it on PCs."

Kahn had another view of Microsoft's strategy to migrate its installed base to objects. "Today, the only thing object-oriented about OLE is its name," he charged. And, infusing his mantra for object technology, Kahn added: "It has no inheritance, encapsulation or polymorphism." He showed a police report program, built by two San Jose, Calif., police officers with Barlind's C++-based ObjectVision. He said his product "surfaced" the object features, allowing users to link spreadsheets and graphs.

Jobs wound up the session by announcing that NextStep 3.0 will ship next month and demonstrating lean-heavy object-oriented applications on a Next computer screen. "We're going to be 60 days late, and I apologize for that," Jobs said, "but at least we have some software to ship."

NextStep 3.0, which runs on Next machines and Intel Corp. i486-based PCs, conforms to the Object Management Group specifications for object-oriented technology, he said.

JEAN S. BOZMAN

Oracle updates application packages

BY JEAN S. BOZMAN
CW1007

SAN FRANCISCO—As expected, Oracle Corp. updated its 4-year-old line of application software packages last week, adding client/server support and graphical user interfaces. The move followed a yearlong re-write of the applications, which have had quality problems since 1988.

"The customers used to be unhappy because they felt they were being used for quality-assurance testing," said George Koch, senior vice president at Oracle's application division. Oracle Applications Release 9 is a suite of 23 financial and manufacturing applications and four programming utilities built with the Oracle Applications Object Library, a replacement for the aging Application Foundation tool kit. Programs are now docu-

mented in Oracle's CASEDictionary so users can customize the packages. They will be available next year on 30 platforms at prices ranging from \$26,000 to \$166,000.

Icon format

A companion product, the Oracle Business Manager, is a personal computer-based "client," that can access all the new applications and present them to end users in an icon-based format.

Previously, Oracle applications were designed for display on character-mode terminals. Users can now store many report formats in the database server, allowing Oracle to support user sites where PCs are used as clients.

Oracle applications users said they were pleased with the enhancements, but several had not been briefed yet. Greg Larson, manager of business systems at

Nerco, Inc. in Portland, Ore., said his energy firm plans to use an automatic posting feature for the General Ledger package, which posts updates from the accounts payable package.

Coca-Cola Bottling Co. in New York and Greenwich, Conn., plans to make use of the Oracle Payables package's "invoice import" feature for electronic data interchange applications, said Ronald Drew, manager of systems development.

Industry analysts said Oracle will be able to grow its \$49 million applications business but will face tough competition from traditional applications vendors.

"D&B is the biggest player in the Fortune 1,000 applications business, and Oracle's applications business is one-tenth that size," said Neil Hill, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.



"AN
ARCHITECTURE
OF POSSIBILITIES
IS ROOTED IN
THE CONSTANT
OF CHANGE."

The architects of software confront the same challenge as the architects of steel and glass: the constant of change.

Changes in business. And changes in technology.

There is one software architecture designed to deal with the constant of change: Sybase.

Sybase gives you the flexibility to create applications that integrate data sources of every kind—databases, multimedia, real-time sources, even mainframe applications—into a high performance client/server computing environment. The flexibility to modify those applications quickly as your business and

computing environment changes. And the flexibility to run those applications on the hardware of your choice: PCs, workstations, minicomputers, mainframes.

This flexibility makes Sybase the most effective technology for building today's on-line enterprise. And gives you a unique ability to adapt to the needs of tomorrow.

Sybase Client/server architecture for the on-line enterprise.

To find out more about our database application development and connectivity products, and our multi-vendor consulting services, call 1-800-8-SYBASE.

The Lloyd Building, London. Designed by Richard Rogers. A unique architectural framework, an interior with all services, which can easily be adapted, removed, or reconfigured, and which can meet change.

 **SYBASE**

CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

Olsen's shadow looms large at DEC

BY MELINDA CAROL BALLOU
and KEN S. NASH
CWSTAFF

MAYNARD, Mass. — The impending exit of Digital Equipment Corp.'s founder, Ken Olsen, left longtime users and DEC watchers pensive last week, reflecting on what once was and how Olsen made it that way.

"It's a hell of a legacy: a \$14 billion company started from a shoebox, one of the world's foremost operating systems, a staff of talented people and a product set that is pretty good, with the Alpha chip set at the pinnacle," said Jeffrey Jalbert, an executive committee member of the Dig-

ital Equipment Computer Users Society.

Observers across the board similarly lauded Olsen for his contributions both to his company and to the industry, which many said would have been vastly different without him.

"When you think about it, if it weren't for Ken Olsen, we'd all be using punch cards still," said Bill Bluestein, a senior analyst at Forrester Research, Inc., a research firm in Cambridge, Mass.

With three other engineers and \$70,000 in venture capital, Olsen created DEC in 1957, pulling the firm up the billion dollar mark 20 years later. As sales crested to \$7.6 billion in 1986,

Fortune called him "arguably the most successful entrepreneur in the history of American business."

But at least 126,000 other people — DEC's head count at its peak this year — helped Olsen achieve those honors and, in a way, helped him decide to leave.

Those who know Olsen said he retired after being pressured to make changes that, while necessary, left a bad taste in his mouth enormous layoffs.

Olsen had consistently objected to wielding the ax and was largely responsible for a generous early retirement plan this spring, observers said.

Just one day before he announced his resignation (CW, July 20), a troubled Olsen told *Computerworld*: "We've always had to adjust our size, but to say that you're going to lose 5,000 people [for example] — I hate this way of doing it. I want to take care of people, tell them one-on-one and help them find a job."

Slow to move

Olsen's reluctance also extended to certain emerging technologies such as personal computing, unshielded twisted-pair cabling and Unix. DEC eventually came around on all counts.

In the case of Unix, Olsen ultimately OK'd the creation of an open version of VMS, DEC's 15-year-old flagship proprietary operating system. He also launched Alpha, a new generation of reduced instruction set computer technology.

Ironically, Alpha machines — widely regarded as DEC's redeemer from financial hell — are due for delivery shortly after Olsen hangs up his chief executive officer's hat at year's end.

When Alpha's, "DEC may well be a technical leader once again, which has a lot to do with [Olsen's] insight and leadership," said Al Chisty, MIS director at Environments Management Services, Inc. in Valley Forge, Pa. "It's a pity that the financial performance of DEC has been weak because they are in for a renaissance" with Alpha.

Dilemma: Should DEC divide in order to conquer?

CONTINUED FROM PAGE 1

no definitive plans, but Jack Smith, senior vice president of operations, said the focus is on certain manufacturing and general administration functions.

If DEC is to survive, Palmer must also change the company's reputation for being slow to react to market demands, said Susan McGary, an analyst at The Yankee Group in Boston.

DEC's traditional monolithic structure kept VMS products "nice and coherent top to bottom, but the company was less able to react quickly to changes in the market that way," said Bill Sines, an analyst at Framingham, Mass.-based Technology Investment Strategies Corp.

Still unclear — but expected to be made public within a few weeks — is just how many DEC employees will lose their jobs. Smith said he had "no doomsday numbers" but to share regarding the severity of layoffs expected, but

he denied that head-count reductions would reach 20,000, a number widely bandied about by analysts.

The company bulldozed its sales during the past year by 23,000, down to 113,800. That 1987 reduction produced about half of the \$1 billion annualized spending cut achieved in fiscal 1992, Smith said.

Smith was equally short on specifics about which product lines will be gutted following staffing and funding cutbacks. "We've taken most of the fat out of the systems. We'll get the rest out through business process re-engineering," he said.

Observers were divided on whether DEC should abandon its second stab at the personal computer business.

However, Smith said the company will push on, despite the merger margins hurting PC veterans such as Compaq Com-

puter Corp. and IBM.

If workers associated with Alpha are safe, so are those in DEC's systems integration group, judging by Smith's remarks. To buffer its hardware strategy, DEC will push hard to promote itself as a service provider, he said. "This is not a 'fix-it' business. Our focus is network management and systems integration," Smith said.

To DEC's credit, service revenue grew 11%, from \$5.6 billion last year to \$6.2 billion for 1992. "In an inflationary year, that's a good sign," noted John Jones, an analyst at Salomon Brothers, Inc. in San Francisco.

And while Alpha remains DEC's great hope, some users said they are just not yet interested in the systems, which are slated to arrive in early 1993.

"I haven't been real impressed with what I've seen so far — and that's only been on paper anyway," said Jeri Mahoney, a systems specialist at Bridge-Stone/Firestone Scientific Computing in Akron, Ohio.

Mid-Atlantic correspondent Thomas Hoffman contributed to this report.

DEC dives

DEC slides into a red hole in the fourth quarter by \$1.8 billion

| | Q4 1992 ended June 27 | Percent change from corresponding quarter, 1991 | Fiscal year 1992 |
|---------------|-----------------------------|--|---------------------|
| Revenue | \$2,918 million | (1%) | \$13,938 |
| Net loss* | \$(1,846) | 112.9% | \$(2,806) |
| Cost of sales | \$2,318 | 13.9% | \$8,138 |

*Includes a \$1.8 billion restructuring charge. 1992 Q4 excludes the restructuring charge.

Source: Digital Equipment Corp.

Walk a mile

Computerworld asked industry veterans, some of whom have been through the corporate wiring themselves, what they would do in Robert Palmer's shoes.



Gordon Bell. Now a consultant, Bell oversaw development of DEC's PDP and VAX minicomputer lines and worked at DEC for 17 years.

"I'd work like hell to get the company focused on lines of businesses. It was incredibly stupid to announce [Alpha] before they had it available."

Edson de Castro. After spending eight years in DEC's engineering department, de Castro left to head Data General Corp. He is a director at a handful of technology firms.

"Forget about the VAX. Don't put any more money into that product line. Tell it like it is on Wall Street. Get on with open systems, PCs and Unix workstations."

John Cunningham. Currently serving as director at several computer companies, Cunningham was formerly a top gun of DEC's rival, Wang Laboratories, Inc.

"Take out three out of every 10 employees from all departments. You just don't need 112,000 people anywhere — I don't care who you are. Find a way into the PC business. They missed in 1982, but that doesn't mean they can't do it now."

Frank Dodge. Chief executive officer of The Dodge Group, a Framingham, Mass.-based client/server software developer, and co-founder of McCormack & Dodge, now part of Dux & Bradstreet Software.

"So many people in this company are over-kill. Get those people who some of them can't let go. Those that can't let go should be sent away — R&D, marketing, sales, everyone. I'd keep people around only to support the VAX line and enhance it."



The customers speak

None of the users interviewed last week envied the challenge awaiting DEC's new CEO, Robert Palmer, but they had plenty of advice for him — particularly on customer and competitor relationships. Time will tell whether the customer is always right.

Richard Marx, director of information services at Commonwealth Electric Co. in Warren, Mass.

"DEC marketing is an oxymoron. If Palmer has a better marketing focus than Olsen did, he has a better shot at turning things around for the company."

Bobby Greaves, systems manager at Champion International, a paper mill in Courtland, Ala.

"I'd get friendlier with other companies."



Ray Sasso, chief information officer of food processing company Simplot Co. in Boise, Idaho.

"They really need to polish up sales and marketing." More often than not, Sasso added, the person selling him a product does not understand how it fits in with the rest of his estimated \$20 million worth of DEC equipment.

"Do something to elevate the stature of the marketing function within the company," he advised Palmer. "The only people who feel loved at DEC are engineers."

They're going to have to make friends with other vendors, especially IBM, if they want to survive. Many businesses run both DEC and IBM equipment, and they want to get that stuff talking to each other."

Key OS/2 ports slow to arrive

BY ROSEMARY HAMILTON
OF STAFF

WHITE PLAINS, N.Y. — In the four months since IBM's release of OS/2 2.0, few major personal computer software vendors have shipped compatible products.

IBM now boasts that 160 companies are shipping OS/2 2.0 applications, including Novell, Inc. and Oracle Corp. But most of the top PC applications providers remain in the verbal commitment phase.

Users contacted last week, however, said they are still so preoccupied with testing and rolling out OS/2 2.0 that they are not yet worried about applications availability. "Most of the majors have 32-bit programs in beta or close to that," said Bob Hecht, vice president of investment systems at Prudential Investment Corp. "You can use most of your DOS and Windows apps under 2.0. But on the other hand, you want [32-bit applications] as an option."

However, Jeff Newman, an assistant vice president at Barclays Bank PLC in New York, said he is still waiting for Microsoft Corp.'s decision on LAN Manager for OS/2, and without that support, his OS/2 2.0 installation will be delayed.

Ruth Warren, a Microsoft senior product manager for LAN Manager, said the company is shipping a client version of LAN Manager with 2.0 support to beta-test sites and forecasts a September ship date. However, the company will not yet commit to a server version of LAN Manager with OS/2 2.0 support because it has concerns about 2.0's "stability."

Other top PC software companies, such as WordPerfect Corp., said they will support OS/2 2.0 but would not say when products would be available.

John Soyring, IBM's Personal Systems director of software development programs, said he is pleased with the progress and pointed out that several top software companies delivered Microsoft Windows 3.0-compatible products more than a year after 3.0's debut.

Borland International, Inc. is shipping ObjectVision for OS/2, but its applications group could provide no specific product plans for 2.0 support. Lotus Development Corp. is committed to releasing its suite of products with OS/2 2.0 support and said its 1-2-3 spreadsheet and Freelance Graphics for 2.0 will ship by year's end.

Also, Microsoft is still holding firm with its strategy not to further enhance OS/2 versions of Excel and Word unless it sees a "sufficient" demand for IBM's 32-bit operating system.

Windows leads Delta to mixed platforms

CONTINUED FROM PAGE 1

ects on a case-by-case basis and select the one with the best cost and functionality. Eubanks also acknowledged that a mixed environment brings a new set of problems: making it all work together.

According to Eubanks, development is under way to bridge the OS/2 and Windows environments, but he would not provide details.

"To get context on this, all you have to do is look at the [financial] news," said Brad Power, a principal at CSC Index, Inc. and director of the company's re-engineering research and advisory service. "They, like all airlines, are in trouble fi-

nancially. If they are looking at technology decisions, then they will look for the lowest cost solution."

Last week, Delta reported a fiscal year 1992 year-end loss of \$506.3 million on revenue of \$10.8 billion. For the fourth quarter, ended June 30, it reported a loss of \$180 million on revenue of \$2.8 billion. Power said the move to a mixed platform strategy also reflects the corporate culture at Delta, which is known as a more practical operation and less pioneering than some of its competitors.

Delta "has very good operators — the best people — and they make very practi-

cal decisions," Power said. "They don't make technically aggressive or risky ones."

Delta will continue to use OS/2 for an airport traffic-management system, according to Eubanks. He said the company will evaluate OS/2 for future projects and has no intention of pulling the plug on it overall.

"We want to do what's best for users, whether it's OS/2, Windows or dumb terminals," Eubanks added.

An IBM spokesman said, "To our knowledge, our relationship with Delta has not changed."

PRESENTING THE AUTOPILOT THAT'LL HELP YOUR DASD SYSTEM FLY ITSELF.



If it's true data storage automation you seek, then your flight has just arrived.

It's called Space Monitor. And it not only automates and controls your DASD storage. It also allows you to see it like you've never seen it before.

For example, once your policies are established, Space Monitor initiates whatever response you've specified. And that response can be anything from a simple notification to the execution of a specific storage management function. It can initiate a backup, delete uncataloged datasets, defragment a volume—in short, do almost anything you need it to do.

All of which makes true automation of your storage management tasks a simple reality.

And speaking of reality, Space Monitor also lets you view your storage environment from a completely unique perspective—whatever makes sense to you.

You can define, monitor and control logical data groups, which can consist of datasets scattered across several volumes—including SMS storage groups. You can "zoom" your view from storage group to volume to dataset. And Space Monitor offers stunning color graphics depicting all of these.

All of which means you can view your DASD any way you want.

And then automate the management of it.

With Space Monitor.

Call Sterling Software at (916) 633-5533. And add the intelligent autopilot to your flight plan.



**STERLING
SOFTWARE**
THE FUTURE IS STERLING.

Sterling Software, Systems Software Marketing Division 11100 White Rock Road #1100, Rancho Cordova, CA 95670 (916) 633-5533.
Sterling Software is a registered trademark of Sterling Software, Inc. All other product names are trademarks of their respective companies.

Check out the
Marketplace Pages
on Page 91.



NEWS SHORTS

BSA to protect software copyrights

Six leading software publishers have given the Business Software Alliance (BSA) authority to enforce their copyrights in North America. Ashton Corp., Autodesk, Inc., Lotus Development Corp., Microsoft Corp. and WordPerfect Corp. asked Washington, D.C.-based BSA to begin a domestic antipiracy program similar to the initiatives it has in 30 countries worldwide. A Lotus spokesman indicated that the vendor would pursue all of its litigation through the BSA rather than the Software Publishers Association (SPA), though Lotus will remain an SPA member. The BSA quickly obtained a temporary restraining order against McAfee, Texas-based CompuMant, which is suspected of leading illegally copied software onto computers it was selling in Mexico. The group also established a software piracy hot line at (800) 688-2721.

Repeal of Section 1706 debated

The campaign to repeal Section 1706 of The Reform Act of 1976 picked up a little steam last week at a hearing held by the House Ways and Means Committee. Testifying for repeal of the provision, which makes it harder for brokered computer programmers to be classified as independent contractors, were Reps. Doug Barnard Jr. (D-Cal.), Tom Lantos (D-Cal.) and Major R. Owens (D-N.Y.). The Information Technology Association of America said it continues to support Section 1706.

SMDS to hit California

Pacific Bell last week filed a Switched Multimegabit Data Service (SMDS) tariff with the California Public Utilities Commission in hopes of making the service available at T1 speeds in the Los Angeles, San Francisco, San Diego and Sacramento service areas come September. Proposed SMDS charges include a \$375 installation fee plus \$600 per month for unlimited use and distance within their local area. Customers still need a dedicated T1 line to their central office, however.

Air traffic control system demo'd

MCI Communications Corp. demonstrated a prototype of its Leased Interfacility National Air Space Communications System (LINCS), a national data and voice network to support air traffic control. Being developed for the Federal Aviation Administration in a 10-year, \$1 billion project, LINCS is based on dual circuits and redundant components and is to have a reliability of 99.999%. It is scheduled for installation in the Northeast in the second quarter of next year.

Kit teaches computer ethics

The not-for-profit Research Center on Computing and Society at Southern Connecticut State University and Educational Media Resources, Inc. have assembled a starter kit for teachers who wish to introduce the social and ethical implications of computing into computer science or computer engineering classes. The kit includes three videotapes and two monographs.

Short takes

Bell Atlantic Corp. appointed Arthur A. Bushkin as its first president of information services at Bell Atlantic Network Services, Inc. ... The National Urban League's Job Opportunity Showcase, a recruiting center for matching minority applicants with jobs open at 200 companies nationwide, is being powered by Digital Equipment Corp. gear connecting the league's 114 offices with its headquarters in New York. DEC gave the league a \$1.5 million grant four years ago. ... Borland International, Inc. has announced an \$800,000 order by Magazines for its Inroads relational database engine. It will be used in Magazines' Advanced Field Artillery Tactical Data Systems contract. ... Verbitron Corp. has said it will offer a lifetime warranty on all of its 314- and 514-in. rewritable optical media. ... Emerald Systems Corp., Everest Tape Products and Mountain Network Solutions, Inc. will offer customers to Computer Conversions, Inc. for data recovery from damaged backup tapes.

Motorola E-mail service bows

BY ELLIS BOOKER
CW STAFF

BOYNTON BEACH, Fla. — Motorola, Inc. last week began offering its next-generation paper service for sending electronic mail and other data to portable computer users.

Embarc, short for Electronic Mail Broadcast to A Roaming Computer, is a noninteractive, one-way service that combines satellite transmission and Motorola's own pocket-size NewsStream receiver to deliver wireless E-mail to laptop, notebook and palmtop computers.

According to Brad Davis, director of strategic marketing for Embarc, Motorola envisions a marketplace represented by the "intersection of electronic mail and portable computer users." That universe currently consists of approximately 6.5 million to 7 million users, according to Davis, who expects to have 50,000 Embarc users within a year.

At least one early Embarc beta-test user said he would be hard-pressed to give up the service, which has enabled him to receive important IBM Professional Office System messages while traveling.

"I'm kinda hooked on it," said J. Joe Marsh, manager of communications technology at Shell Oil Co. in Houston. Since Janu-

ary, Marsh and 26 staff members have been testing the service with a variety of laptop, palmtop and pen-based portable computers.

Motorola said last week that it expects its Embarc service to cover the Top 200 U.S. markets by year's end, with plans to expand to 300 markets by 1994 and worldwide coverage during the next few years.

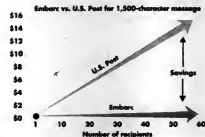
The cost of Embarc includes a one-time \$395 charge for the NewsStream pager, "AA" battery, interconnect cable, belt

holster and Embarc/DOS user software. The service also carries a basic fee of \$15 per month, which includes the delivery of news and weather updates from USA Today.

Message senders are charged 13 cents per message, as well as a "wireless stamp" delivery charge ranging from 5 to 50 cents per 100 characters. The fastest speed at which a message can be forwarded to a mobile unit is 15 minutes; the slowest and least expensive rate is for overnight delivery.

The medium is the message

Embarc's price remains flat as the number of pages receiving information increases



Source: Motorola, Inc.

Export barriers on encryption eased

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The Bush administration recently relaxed controls on the export of some software with encryption capabilities, a move vendors said should lead to better security features in mass-market packages.

Companies that were inhibited in putting security features into their products for fear they could not be exported — or because they could not afford to go through the laborious export approval process — said last week they will accelerate plans to add features for encrypting spreadsheets, files and messages.

"Our customers are asking for security, but to date we have not had a lot of security features," said Nathan Myhrvold, vice president of advanced technology and business development at Microsoft Corp. "We are now able to provide it, domestically and internationally."

No details

Myhrvold would not say when and where encryption features would appear in the Microsoft product line but pointed out, "We've said that the Windows

NT operating system will have security features, and we've announced that we will license the RSA encryption technology" from RSA Data Security, Inc. in Redwood City, Calif.

John Winterhalter, manager of information systems at JM Co.'s Commercial Office Supply Division, said the lack of encryption in most mass-market software is increasingly a problem as companies expand overseas, increase connectivity and move from private to public networks.

"It's critical that we have encryption capabilities. SM is a global company, and we're running our business on E-mail today. If we and our global partners can't be secure in our communications, we have a big problem," he said.

In a letter to Congress, National Security Adviser Brent Scowcroft said the White House and the Software Publishers Association had developed procedures by which software containing RSA's encryption algorithms with limited encryption key lengths would be effectively freed from export controls.

However, Scowcroft said other encryption methods, such as the federal government's Data Encryption Standard (DES) al-

gorithm, widely used in the banking industry, will continue to be strictly controlled.

Top secret

While industry has gravitated toward RSA's techniques as a standard — with most major software firms having licensed them — the 15-year-old DES algorithm, which uses a 56-bit key length, provides more security than the algorithms approved for export, which use 40-bit keys.

However, unlike the DES algorithm, RSA's algorithms — called RC2 and RC4 — use a variable key length that can be changed by recompiling software. Myhrvold said he prefers RSA's algorithms because they are much more efficient than DES. He said Microsoft would boost security on products for export by increasing key lengths as allowed by the government.

But Lee Merce, corporate export manager at Digital Equipment Corp., said the failure to free DES products for export was disappointing and inexcusable because DES is already available from foreign competitors.

DEC offers products based on DES and has licensed RSA technology but does not offer products based on it.



DAN H.
CUIP



**WHY
A COMPANY
THAT'S KNOWN
FOR RELIABLE
PERFORMANCE
GOT A CHARGE
OUT OF OURS.**

When millions of people worldwide turn to Duracell batteries, they expect the best in performance. When Dan Harris, MIS Manager for Duracell Australia, turned to IPL's 8mm back-up, he expected the same.

"Before IPL, back-ups were a real problem for us. Using standard tapes, it would take a full nine hours to do a complete system save. We'd have to open our facility on a Sunday, and with a day of tedious work in front of us, the process was very stressful."

Instead of hiring additional staff to solve the problem, Dan turned to IPL's 8mm solutions. "Thanks to IPL's 6765 tape drive, Duracell's back-up is now a totally unattended process using 8mm technology. We even took the extra step of testing the drive at our IBM disaster recovery site in Sydney. It performed impeccably."

Which means fewer headaches for Dan, and more time to concentrate on other areas of the business. "Working with a storage leader like IPL was refreshing. The quality information and attention we received helped us make a comfortable decision, and local service made installation simple. We're grateful to have such a top performer on our side."

To see how you can benefit from IPL's broad range of AS/400 disk, tape and memory solutions, or for our complimentary guide to AS/400 tape drive choices, call IPL today at 1-800-338-8475; 617-890-6620 in Massachusetts. In Canada, call 800-565-5606. In Europe, call 011-32-2-725.40.87.

IBM and AS/400 are trademarks of International Business Machines Corporation.

ipl
SYSTEMS

**The Smart Choice
for AS/400 Storage.**



HEY... EVER GET
DID YOU
MY MEMO

WordPerfect answers the most-asked question about electronic mail.

Click on "Send" in many of today's e-mail packages, and the urgent message on your screen will disappear, perhaps never to be heard of again.

You'll have no way of learning if it was ever delivered, or opened. You'll have no way of checking what you sent to whom, or when. And if you ever need to retract a message for corrections, well, no way.

So it's no wonder that in surveys of the features users would most like to see incorporated into their e-mail packages, message tracking ranks at or near the top. Except, that is, in surveys of WordPerfect Office users.

An In Box Is Not Enough

In addition to the In Box that every e-mail package offers, WordPerfect Office gives you an electronic Out Box. So in addition to all the usual things you'll be able to do with your incoming mail (including read, reply, forward, save and print), we give you unusual control over your *outgoing* messages as well (including the ability to reread, rethink, rewrite and retract).

And the Out Box is just one of the features that separates WordPerfect Office from the rest of the e-mail pack.

E-Mail Everyone Can Agree On

If people would simply agree on a single computer platform, hooking everyone up with an e-mail system would be no trick. But since *that* shows no signs of happening, WordPerfect

Office is available for all of the most popular platforms, including DOS, Windows, Mac, UNIX, VAX and Data General.

With WordPerfect Connections (included in Office 3.1), a DOS and Windows LAN can connect seamlessly (and transparently) with VAX and UNIX LANs, for example. So a message that goes out in Windows can arrive in UNIX and lose nothing in the translation.

Getting Your Message Out

Far-flung empires will find WordPerfect Office equally accommodating, with gateways to messaging systems that include Novell MHS, IBM OfficeVision, DEC, X.400, SMTP, MCI Mail and AT&T EasyLink, among others.

And unlike e-mail packages that simply deliver the mail, WordPerfect Office includes powerful Calendar and Scheduling functions that provide entirely new ways for your people to work together productively.

Let Us Show You How It Works

With WordPerfect Office, the possibilities are nearly limitless. And the technical support for users and administrators is widely acknowledged to be the best in the business. To learn more, contact your WordPerfect Representative, or for a free video demonstration, call (800) 526-5064.

(Until you have a more effective means of business communication up and running, the telephone will have to do.)

WordPerfect

WORDPERFECT IS A REGISTERED trademark and WORDPERFECT OFFICE is a trademark of WORDPERFECT CORPORATION within the United States and other countries. All other names and product names and trademarks are trademarks of their respective owners. WORDPERFECT CORPORATION

Proteon adds low-end router for uninitiated, remote users

BY JOANIE M. WEXLER
CW STAFF

WESTBORO, Mass. — The plight of the minimally trained remote field office seeking admittance to the corporate network improved a notch last week with a low-end internetworking announcement from Proteon, Inc.

The shot in the arm arrived in the form of an inexpensive multiprotocol bridge/router that comes largely preconfigured

per instructions users check off on an L. Bean-like order form.

Proteon's \$4,995 to \$7,995 DNX 300M addresses companies' economic inability to stock many small, far-flung sites with expertise for supporting complex networking equipment.

The router's ease of use "is amazing — anyone can configure the thing," said Mike Gourley, network administrator at Physicians Mutual Insurance Co. in Omaha.

Gourley said he was initiated into the router world with the Proteon product and installed it in under 10 minutes. "I've heard horror stories from people who have spent three hours configuring other routers and still don't get it quite right," he said.

Comparing the two

Since Physicians Mutual is a Novell, Inc. shop, Gourley also evaluated Novell's multiprotocol router software. While cost-effective, he said, it was cumbersome and offered a lower throughput.

Matthew Heath, section head of the data communications group at Gulf Stream Aerospace Corp. in Savannah, Ga., also evaluated the Proteon product against the Novell low-end router soft-

ware he had been previously using. In terms of economics, he countered that "by the time I buy a dedicated PC [for performance], outfit it with LAN cards and buy a keyboard and monitor, the price [of the Novell router] is comparable to Proteon."

In addition, the Proteon router has "more functionality, more protocol support and higher throughput," he added.

Cable connections of all types, flash memory for remote software loading and reconfiguration, multiple front- and back-panel LEDs and a yes/no step-through configuration menu target remote-site personnel who are minimally interested in the intricacies of networking. The Proteon DNX 300M is due to ship this week.

Users will beg for more

While analysts agreed that the Proteon rollout is in sync with user needs, users will soon be looking to integrate more function into remote-site devices such as smart wiring hubs for further economies of scale, noted Dave Passmore, a vice president at Stamford, Conn.-based Gartner Group, Inc.

For example, Wellnet Communications, Inc. routers already allow users to connect a private branch exchange into its router and multiplex voice and data over the same T1 line instead of paying for separate links, he said.

Similarly, Micom Communications Corp. announced in May a device it calls NetRunner, a \$3,500 end-user bridge-like product that packs Ethernet local-area networking, IBM Systems Network Architecture and voice and fax transmission on one 56K bit/sec. leased line [CW, May 11].

NCR picks image partner

BY ELLIS BOOKER
CW STAFF

DAYTON, Ohio — NCR Corp. last week picked a marketing partner for a check imaging system aimed at the nation's 7,200-plus community banks.

Under terms of the agreement, NCR's System 3000 — a scalable, microprocessor-based Unix line — and its check-sorting/signature-recognition hardware systems will be coupled with image statement software from Document Solutions, Inc. in Birmingham, Ala.

Formed last year, Document Solutions specializes in imaging software for banks with assets of \$50 million to \$500 million.

The NCR/Document Solutions effort will involve approximately 200 NCR salesmen from more than 50 offices who will work with Document Solutions' sales and technical staff, according to the companies.

Last October, NCR and Wachovia Corp., a Winston-Salem, N.C.-based bank holding company, announced a strategic partnership to test NCR's Scalable Image Item Processing System (SIIPS). SIIPS, which also uses the NCR System 3000 hardware platform, is scheduled for release in 1993.

A scalable solution, SIIPS will initially be targeted at large financial customers with assets of more than \$1 billion, NCR said.

Datapro rates TMON for CICS tops in user satisfaction

Computerworld buyers scorecard ranks TMON for MVS first

Eyewitness chalks up highest rating in Xephon user study

The Monitor for VTAM shines in Xephon survey

TNET.

A SYSTEMS MANAGEMENT BREAKTHROUGH THAT WASN'T BORN YESTERDAY.

There's nothing like the thrill of discovering new technology that makes your job easier. Better yet — a quantum leap that's well-grounded in time-tested, top-rated products. Take TNET™. When it comes to improving IBM® systems performance, only TNET — the architecture on which our networked family of performance

tools is based — takes you straight from problem to solution.

Best of all, TNET is based on industry-leading performance monitors and proven problem management products. World-class tools that users and independent researchers alike rate number one in value, service, and ease-of-use.

So, if you want tomorrow's solution that already has a reputation for excellent results, call us. We'll be happy to share with you some user success stories and industry studies from Computerworld, Xephon, and Datapro.

THE LANDMARK ADVANTAGE

THE MONITOR FOR CICS® • THE MONITOR FOR CICS® (MSE) • EYEWITNESS® • THE MONITOR FOR MVS®
THE MONITOR FOR DB2 • THE MONITOR FOR VTAM • NAGGAIN™

Landmark Systems Corporation® 8000 Towers Crescent Drive Vienna, VA 22182 1-800-227-8911

LANDMARK



"YOU KNOW, WHEN I ASKED TO BORROW YOUR COMPUTERWORLD I SORT OF HOPED TO GET THE WHOLE THING AT ONCE."

YES, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$38.95* per year — a savings of \$9.00 off the basic subscription price.

First Name M Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew ☐ Basic Rate: \$48 per year

*U.S. Only: Canada \$74.97, Central/South America \$138, Europe \$195, all other countries \$205. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD



"YOU KNOW, WHEN I ASKED TO BORROW YOUR COMPUTERWORLD I SORT OF HOPED TO GET THE WHOLE THING AT ONCE."

YES, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$38.95* per year — a savings of \$9.00 off the basic subscription price.

First Name M Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew ☐ Basic Rate: \$48 per year

*U.S. Only: Canada \$74.97, Central/South America \$138, Europe \$195, all other countries \$205. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS INDUSTRY (Circle one)
- 10 Manufacturer (other than computer)
 - 11 Financial Institution/Real Estate
 - 12 Government/Non-Profit
 - 13 Information/Consulting
 - 14 Wholesale/Retail Trade
 - 15 Business Services (except CP)
 - 16 Government - Non-Profit/and Communications Systems/Public Utilities/Transportation
 - 17 Mining/Construction/Healthcare/Hospital/Engineering
 - 18 Manufacturer or Computer
 - 19 Computer Related Systems or Peripherals
 - 20 System Integrators, Vendors, Computer Service/Business Software Training & Consulting Services
 - 21 Computer Peripheral Dealer/Other Reseller
 - 22 Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)
3. VIEWS OF MANAGEMENT
- 10 Chief Information Officer/VP/President
 - 11 Asst. VP/Chief of Management
 - 12 Dir. Mktg. Mktg. Services Information Center
 - 13 Dir. Mktg. Tech. Planning, Adm. Serv. Data Comm. Network Sys. Mgt. Lit. Mgt. PC Mgt.
 - 14 Dir. Mgt. Sys. Development, Sys. Administration
 - 15 Programming/Management Software Development
 - 16 Engineering, Scientific, R&D, Tech. Mgt.
 - 17 Staff Integrating/VP/Chief Consulting Mgt.
4. CORPORATE MANAGEMENT
- 10 President/Chief Executive Officer
 - 11 Vice President/Asst. VP
 - 12 Treasurer/Controller/Financial Officer
5. DEPARTMENTAL MANAGEMENT
- 10 Sales & Mktg. Management
 - 11 Medical/Legal Accounting Mgt.
6. OTHER PROFESSIONAL MANAGEMENT
- 10 Executive/Analyst/Consultant/Student
 - 11 Other Title/Personnel

3. INVOLVEMENT (Circle all that apply)
- Please indicate your involvement in:
- A. Management/Systems/Software/Staff
 - B. Management/Systems/Software/Staff
 - C. Purchase of Equipment
 - D. Evaluation of Equipment
 - E. No involvement

E4230-X

1. BUSINESS INDUSTRY (Circle one)
- 10 Manufacturer (other than computer)
 - 11 Financial Institution/Real Estate
 - 12 Government/Non-Profit
 - 13 Information/Consulting
 - 14 Wholesale/Retail Trade
 - 15 Business Services (except CP)
 - 16 Government - Non-Profit/and Communications Systems/Public Utilities/Transportation
 - 17 Mining/Construction/Healthcare/Hospital/Engineering
 - 18 Manufacturer or Computer
 - 19 Computer Related Systems or Peripherals
 - 20 System Integrators, Vendors, Computer Service/Business Software Training & Consulting Services
 - 21 Computer Peripheral Dealer/Other Reseller
 - 22 Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)
3. VIEWS OF MANAGEMENT
- 10 Chief Information Officer/VP/President
 - 11 Asst. VP/Chief of Management
 - 12 Dir. Mktg. Mktg. Services Information Center
 - 13 Dir. Mktg. Tech. Planning, Adm. Serv. Data Comm. Network Sys. Mgt. Lit. Mgt. PC Mgt.
 - 14 Dir. Mgt. Sys. Development, Sys. Administration
 - 15 Programming/Management Software Development
 - 16 Engineering, Scientific, R&D, Tech. Mgt.
 - 17 Staff Integrating/VP/Chief Consulting Mgt.
4. CORPORATE MANAGEMENT
- 10 President/Chief Executive Officer
 - 11 Vice President/Asst. VP
 - 12 Treasurer/Controller/Financial Officer
5. DEPARTMENTAL MANAGEMENT
- 10 Sales & Mktg. Management
 - 11 Medical/Legal Accounting Mgt.
6. OTHER PROFESSIONAL MANAGEMENT
- 10 Executive/Analyst/Consultant/Student
 - 11 Other Title/Personnel

3. INVOLVEMENT (Circle all that apply)
- Please indicate your involvement in:
- A. Management/Systems/Software/Staff
 - B. Management/Systems/Software/Staff
 - C. Purchase of Equipment
 - D. Evaluation of Equipment
 - E. No involvement

E4230-X



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



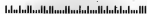
BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



Pentagon opens software reuse center

Reuse could help the federal government save \$15 billion in annual software expenditures

BY GARY H. ANTHIES
CW STAFF

FALLS CHURCH, Va. — The U.S. Department of Defense (DOD) laid a cornerstone in its huge Corporate Information Management (CIM) program last week when it opened its Center for Software Reuse Operations.

The center provides access to the Pentagon's new Defense Software Repository, which contains 2.2 million lines of Cobol and Ada code in 1,531 reusable

software modules.

The software, mostly for financial and logistics applications at present, is available to users throughout the department and to DOD contractors via an automated catalog and retrieval system. "We're open for business. The software is available," said William Geller, deputy program manager for software reuse at the Defense Information Systems Agency.

The repository was stocked initially with software taken from the U.S. Army's Reusable Ada Products for Information

Systems Development system, which last week won a "golden nugget" award for excellence from CIM director Paul A. Strassmann.

"We'll get 50% of our needs from reusable components," said Strassmann, the Pentagon's director of defense information. "This will help get the bugs out and help with maintenance."

CIM is a set of initiatives that includes software reuse, computer-aided software engineering, elimination of redundant systems and a cut in the number of DOD



Robert Hendy/CW

data processing centers (CW, June 8).

Strassmann said he expects software reuse to bring about half of the \$30 billion target reduction in annual software expenditures resulting from CIM.

Prime eliminates hardware group

BY KIM K. NASH
CW STAFF

NATICK, Mass. — Prime Computer, Inc. will shut down its entire hardware business immediately, halting previous plans to sell the division to a group of company managers led by Neil McMullen, the president of Prime's hardware group.

The company filed documents with the Securities and Exchange Commission (SEC) last week, stating that McMullen's group, ComputerVision — Prime's software unit — and unnamed third parties were "unable to reach final agreement."

As a result, all hardware manufacturing operations will be discontinued. Prime's proposal to take ComputerVision public remains in effect.

The move leaves Prime minicomputer customers at a crossroads. One path would let the approximately 9,700 Prime minicomputer sites press on, receiving support from the PrimeService group that was recently folded into ComputerVision (CW, June 8).

The other road leads Prime users away from the vendor. The SEC papers outline an undefined "short-term" plan to "aid existing customers for an orderly transition to alternate hardware."

Where to now?

Some users will forego that favor. For example, Stan Zelepaky, manager of information resources at the energy division of Zurn Industries, Inc. in Erie, Pa., said he has been preparing for the Prime shutdown for two years now.

"Even the staunchest Prime supporters have seen the writing on the wall," Zelepaky said. A faithful Prime customer for a dozen years, his division is midway through migrating engineering applications from a Prime 2950 minicomputer to a network of Sun Microsystems, Inc. workstations.

On the business side, the company plans to keep a Prime 9955 for another year and a half, "but now that we've been able to touch and feel Unix, it does seem to be the way to go," Zelepaky said.

Hammatsu Corp. in Bridgewater, N.J., is in the uncomfortable position of having just spent \$100,000 on a 5350 model. Eric Atanda, who is responsible for systems and telecommunications at the scientific tools maker, said Prime gave no indication that it was closing down.

The International SCO Technology and Marketing Conference

SCO FORUM 92

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

**Resellers, Developers, and Users—
Join the SCO Community at the
International Conference that
Means Business!**

SCO Forum 92

University of California, Santa Cruz

August 17 - 21, 1992

- Keynote Presentations by Industry Leaders!
- Now Executive Forum Track with User-Oriented Case Studies!
- Separate Technical and Marketing Tracks!
- Exhibition of New Products for the SCO Environment!
- Over 50 Sessions in All!

Register Now

SCO Forum 92 is limited to 1,500 attendees, so register now!

From the U.S. and Canada: call (800) 553-9939.

From Asia and Latin America: call (415) 941-0440.

From Europe, Africa, and the Middle East:

call +44 (0) 923 816344 (ask for Alison Kerringham).

See you in August!

SCO
OPEN SYSTEMS SOFTWARE
The Business Choice



PS/2

This PS/2 SLC is so fast, it comes with its own speeding ticket.

With our advanced SLC processor, the PS/2[®] Models 56 and 57 are clearly on a fast track. They're already the fastest systems in their class.* And with this special IBM PS/2 486SLC2 Processor Upgrade, we plan to keep them that way.

Buy a PS/2 Model 56 or 57 SLC before October 1, 1992, and you'll get information on how to upgrade to our powerful 486SLC2 processor at a special low price of \$259**.

486SLC2 Power for \$259**

OS/2[®] 2.0 comes pre-installed on both models, so you can run DOS, Windows[™] and OS/2 applications. And every PS/2 comes with HelpWare,[™] a full range of services and support including a toll-free number.

The PS/2 Models 56 and 57 offer so much, other computers might as well hit the road. For more information about our specially priced 486SLC2 upgrade or for the IBM authorized dealer near you, call our HelpCenter[™] at 1 800 PS2-2227.



- PS/2 486SLC2 Processor Upgrade for just \$259.
- Faster than any system in its class.
- Comes pre-installed with IBM OS/2 2.0.
- HelpWare: services and support nobody else can touch.
- To learn more about our 486SLC2 upgrade, call 1 800 PS2-2227.

Tick, Tick, Tick. Boom! You're Dead.

A time bomb may be lurking inside your modem. A fatal flaw that can paralyze the data you're transmitting, causing untold chaos to the flow of accurate data you need.

You see, some modem manufacturers decided to turn their backs on proven modem technology, and on you. They haven't told you about the dangers because the only solution for this crisis is to replace their modems. Fortunately, Hayes® can give you the knowledge to locate the bomb and prevent the purchase of another one.

HOW TO UNCOVER THE BOMB. We've developed a FREE test kit that's extremely easy to run on your PC or Mac. The kit spells out the dangers completely and accurately tracks down their fatally flawed component. To order your FREE kit, just call 800-846-8388, FAX your request to 404-729-6650, or download the test files from the Hayes BBS.

THE ONLY WAY TO BE COMPLETELY PROTECTED. You can protect your data, your company,

and even your job by purchasing modems that incorporate licensed technology from Hayes. Modems using complete solution Rockwell chip sets are licensed as well as most modems of direct licensees of Hayes U.S. Patent 4,549,302. So look for the symbol. It means your modem uses the industry-standard escape sequence technology that has established its reliability for over a decade. Of course, all modems and ISDN products manufactured by Hayes use this technology as well.

The bomb is armed. The clock is ticking. Where will you be after the bomb goes off? Contact Hayes today for your FREE test kit and stop data transmission disaster before it strikes.



Why settle for anything less?
Hayes products have the computer
world talking. More than ever.

Go On Line with Hayes BBS; call 800-874-2937 or 404-446-6336

©1992 Hayes Microcomputer Products, Inc., P.O. Box 96099, Atlanta, GA 30306

ADVANCED TECHNOLOGY

Fingerprinting a computer security code

Biometric devices secure computers beyond a reasonable doubt using personal characteristics no one can steal

BY JAMES DALY
CW STAFF

They can steal your access card, and computer passwords are easily cracked. But nobody can steal your retina. Or your fingerprint. Or your voice pattern.

After serving as high-security watchdogs at government installations for the past 20 years, biometric security devices — which identify people through unique body characteristics — are finally gaining supporters in many commercial installations. The reasons are many, including the fact that some individual biometric security devices now cost less than \$2,000, down from almost \$9,000 in 1985.

More importantly, however, is that many in the security field believe there is no more foolproof way to identify individuals than through biological characteristics — retinal blood vessel patterns, hand geometry and fingerprints — and their behavioral idiosyncrasies, such as signature, vocal intonation and keystroke dynamics. Biometric identifiers, unlike memory-based secrets, cannot be transferred by threat or gift.

"These things are hard to fool, no

doubt about that," said Dale Bader, supervisor of operations support at Alascom, a long-distance telecom service in Anchorage, Alaska, that uses a retinal scanner from EyeDentify, Inc.

Security experts say the current method of accessing computers through a password is inadequate in terms of security and administrative costs. Computer crackers and disgruntled employees breaking into computers pose a serious security threat, particularly as more computers are linked via file-sharing networks.

Meanwhile, biological characteristics such as retinal blood vessels are unique — not even identical twins have the same patterns. And James Bond movies notwithstanding, even a cornmeal transplant will not fool a retinal scanner.

Gaining attention

Today's most popular biometric security devices include fingerprint readers, retinal scanners and devices that recognize handprints and signatures (see story below).

Using a biometric security device is a two-stage process: During enrollment, a computer-generated template is created that the machine will use to match the pattern of the person seeking access. During log-on, the user's



David Greenman

pattern is scanned and compared with the template created during enrollment. In many cases, the user will also enter a personal identification code, and both need to match for access.

The systems are not without their glitches, however. Although the systems are much better than in their hit-and-miss early days, problems can still occur. Dolores Tilton, who manages the law offices at the Bank of Boston, uses a fingerprint scanning device that works "most of the time." She adds that when users' hands are cold, they sometimes get rejected. Other people's fingerprints will never get a correct reading, Tilton said.

Bader noted that Alascom's retinal scanning system occasionally will not recognize a pattern if the user is not situated correctly. "If a person is a little crooked, they'll be denied access," she said. But, she added, "that's the user being sloppy, not the machine."

Accuracy is key

All of this points to the fact that biometric identifiers have to be practical. "A reject rate of even 1% is too high," said David Stang, chairman of the International Computer Security Association in Washington, D.C. "If you have five users a day out of 500 winning, it's going to get irritating fast."

Many biometric security devices can be intimidating to users the first few times. Fingerprint scanners, for instance, may be associated with criminal bookings. And some users fear retinal scanners because they do not like the idea of exposing their eyes to the infrared light these devices direct through the pupil to the back of the eye to read retinal patterns.

But people should get used to biometric security devices because they are ex-

pected to become more pervasive in everyday life. New York's Kennedy Airport, for example, will soon begin testing a system developed by Recognition Systems that uses infrared hand scans to cut delays caused by passport checks. A traveler inserts his passport's computer-readable page into a machine while placing his other hand into a scanner that reads such characteristics as the distance between finger joints. The two-second process can tell whether the passport belongs to the person holding it.

While most biometric devices today secure physical access to computer areas, experts said that will change as users become accustomed to secure computers. Already, one contractor for the Department of Defense has a database that requires users to pass muster on an EyeDentify retinal scanner before they gain access. But high cost prohibits most such use at commercial establishments.

Security experts like Stang expect biometric devices to get even more sophisticated. Stang has envisioned what he calls a "biometric access control product" in which a user sits down at his terminal and the machine lets him in. His chair, coupled to his machine, weighs him and records the information. Today's weight is compared with the weight at his last session. The more sophisticated models would also measure the pressure of a user's back against its back to get a sense of the person's degree of slosh.

That is a prospect security personnel are anxious to embrace. Biometric security devices "are so wonderful because they're so easy," Bader said. "One day we'll wonder how we ever got security without them."

Personal security

The following is a list of some of the commercially available biometric security devices:

• **Fingerprint readers.** These identify people by the shape and number of "minutia," points where fingerprint ridges fork or end. Leading manufacturers include Fingerprintix, Inc. in North White Plains, N.Y.; Identix, Inc. in Sunnyvale, Calif.; and Identity Systems International, Inc. in Edmonton, Alberta.

• **Retinal scanners.** A typical scanner sends a beam of low-intensity, near-infrared light through the pupil, illuminates the retina. Since blood vessels absorb more light than the surrounding tissue, the scanner can measure intensity variations at points on the retina. These values are digitized and matched against the "eyepoints" stored in the database. The leading vendor is EyeDentify in Portland, Ore.

• **Hand geometry.** A reader uses light to construct a three-dimensional image of a person's hand, examining each characteristic as finger length, width and hand thickness. Popular systems are made by San Jose, Calif.-based Recognition Systems and PalmSecure in Portland, Ore.

• **Voice verification.** A technology that constructs a mathematical model of a speaker's vocal tract, which is used to identify a voice pattern. Manufacturers include Alpha Microsystems in Santa Ana, Calif., and Voice Check, Inc. in Boulder, Colo.

• **Signature recognition.** A pattern recognition technology that learns both what a signature looks like and how it is executed. Signatures are also analyzed through pen pressure, character shape and pen acceleration. With each acceptable signature, the individual's file is updated to allow for natural drifting in the user's signature over time. Makers of such systems include Menlo Park, Calif.-based Communication Intelligence Corp. and Autogest Systems, Inc. in Irving, Texas.

Borland's Why it's smart

The #1-selling database

dBASE® is the #1-selling relational database in the world. It offers the most complete set of tools for developers and users to access and manage their corporate data.

Today, more than three million people use it to build applications that help them run their businesses and maintain a competitive edge. And with the world's largest community of trainers, consultants, and add-on software extensions, it's little wonder that dBASE is the standard for corporate applications development. Now, new dBASE IV version 1.5 makes it smarter than ever to go with #1.

New! Version 1.5 is here

Now there's an easier-to-use, faster, and more powerful dBASE. It's packed with the features you've asked for most, making it smarter than ever to use the world's #1 PC database.

Working smarter is faster



With new dBASE IV, you get the job done faster because you work smarter. dBASE because new IQ!™ optimization technology



The Worldwide Standard

What's new in dBASE IV 1.5:

For Users

- Mouse support
- Editable multi-file view
- Calculated field linking
- QBE summary operators and pick lists
- Automatic install
- New optimization technology—IQ!
- Save query indexes

For Developers

- INDEX functions
- 40 work areas
- Template Language included
- Enhanced BLANK support
- Browse/Edit window screen toggle
- Conditional compilation
- Low-level file I/O
- Open architecture Control Center
- Enhanced RUN function
- Multiple and global procedure libraries

automatically selects the fastest method to retrieve your data. Smarter because you can create tables, forms, reports, queries, and menus in record time—without programming.

Smarter because you get 40 different work areas for easier management of large applications. Plus mouse support for fingertip access to features, an enhanced RUN function to run popular DOS applications from within dBASE, and comprehensive multi-user capabilities. All of which means you maintain tight data integrity, more flexibility and more support than ever before.

Advanced design tools build applications faster

dBASE IV's easy-to-use Control Center comes complete with an innovative set of design tools, including report, form, and label generators that help you create your applications quicker. And the Control Center's open architecture makes it easy to enhance or customize your own applications by incorporating third-party add-on products available for dBASE.

40
Different
Work Areas
New Commands

dBASE IV[®] er to go with #1

Faster applications development

The industry-standard dBASE language comes with a host of improvements that speed development:

- Integrated debugger and a built-in applications generator
- More than 40 new commands, functions, and keywords—
- Template Language now included
- C language-like low-level file I/O
- IBM® SAA-compliant SQL
- Advanced BLANK support

100% commitment to dBASE

Now that it's from Borland, your investment in dBASE is secure. dBASE gives you all the benefits of complete compatibility and application portability that come with the database standard. And Borland is the acknowledged database technology innovator, so you're on the winning team for the long haul. Get dBASE IV v1.5 today. You'll see why it's smarter than ever to go with #1.



Get **NEW dBASE IV v1.5** today and receive more than \$250 in additional software,



FREE!

See your dealer or call now
1-800-331-0877, ext. 0430.
In Canada, call 1-800-481-3827.



Send me my FREE Pro Pack Software!

Purchase dBASE IV v1.5 before September 30, 1992, and Borland will give you Central Point Software's Backup and Anti-Virus programs free.* That's a suggested retail value of \$250.

Check DOS disk size required: ☐ 5 1/4" ☐ 3 1/2"

dBASE IV v1.5 Serial # _____

Name _____

Company _____

Address _____

(We cannot ship to P.O. boxes.)

City/State/Province _____

Zip/Postal Code _____

Phone (_____) _____

FAX (_____) _____

COMPLETE this coupon. ATTACH a copy of your sales receipt (or a copy of purchase order and billing invoice) AND ENCLOSE \$0.00 U.S. for shipping and handling (check or money order payable to Borland International, Inc.).

Send to: Borland's Pro Pack Offer, P.O. Box 7243, San Francisco, California 94120-7243.

*Offer good in U.S. and Canada only on dBASE IV v1.5 purchases between June 1 and September 30, 1992. Only original coupons will be accepted. No responsibility is assumed for lost, late, misdirected, or destroyed mail. Please allow 4-6 weeks for delivery. Subject to all local, state, and federal regulations. Void where prohibited. Offer not valid for upgrades. Competitive companies, like Paradox, Visual Basic, or any other Borland promotion except dBASE IV v1.5 products. Distributors and resellers not eligible to participate. Central Point is a registered trademark of Central Point Software.

BORLAND

dBASE IV from Ashton-Tate,® a Borland Company

EDITORIAL

No time to lose

| DEC | | | |
|------|---------|-----------|----------------------|
| | Revenue | Employees | Revenue per employee |
| 1986 | \$7.48 | 94,700 | \$80,140 |
| 1991 | \$12.96 | 131,000 | \$114,967 |

| Hewlett-Packard | | | |
|-----------------|---------|-----------|----------------------|
| | Revenue | Employees | Revenue per employee |
| 1986 | \$7.11 | 82,800 | \$86,409 |
| 1991 | \$14.58 | 89,700 | \$161,372 |



Which of the above companies is in trouble?

By now, everybody knows the answer to that question, and the departure of Ken Olsen from DEC is only the first step in the long journey that company must make back to profitability.

I'll miss Olsen. He is part curmudgeon, part teddy bear, a brilliant engineer, a technical visionary and one of the few genuine characters in the industry. But I would have missed DEC a lot more if he had stayed on its current course.

Compare DEC to Hewlett-Packard, whose chairman, John Young, retired the same day as Olsen. Both companies cut their teeth selling computers to engineers. Both put down roots in proprietary systems and risked being swamped by the move to openness.

The difference is that HP saw it coming. In 1986 and 1987, it clamped down on hiring and put forth a radical strategy to convert its products to a RISC/Unix architecture. It committed to maintaining a competitive PC product line and began to build a desktop peripherals business that today is the envy of the industry. Above all, HP decentralized and pushed profit-and-loss responsibility down to the divisions.

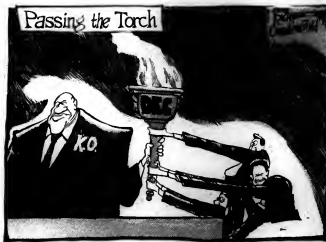
DEC has been late or unwilling to adopt any of those strategies and, as a result, finds itself in a terrible mess. The mandate for DEC's president-elect, Robert Palmer, is to make changes fast. Palmer also should adopt a 100-days strategy that by year's end makes a dramatic statement about where this company is going.

DEC needs to lose at least 20,000 employees to bring its cost structure back within striking distance of the rest of the industry. Palmer also should consider decentralizing the organization to a much greater degree.

DEC must commit every resource it has to moving its customers to the Alpha line with a minimum of cost and pain. Most importantly, DEC must ship Alpha on time — or early. And the product's gotta be good.

DEC's customers really want the company to succeed, and you can't buy loyalty like that. But dire problems call for drastic solutions. Now's the time for action.

Paul Gillin
Paul Gillin, Executive editor



LETTERS TO THE EDITOR

Hot tub photo in poor taste

I see your publication treats women in computing flippantly. No wonder there are so few in this field.

In the June 29 issue's pictures of men, men work. In the pictures of women, they are pretty but obviously not good for working. Women work, too.

I would have hoped your publication would indicate that through its choice of images. I hope you use better images in the future.

Gerald W. Edgar
Renton, Wash.

Regarding "L.A. support system up in smoke" [CW, Exec-

utive Report, June 29]: Every photograph of an IS professional in this issue either depicts that person in a business setting or is a formal head shot — except for one: Peggy Stoker, IS chief and head of the trauma and EMS system for Los Angeles County. She is shown in her hot tub.

I was very surprised and discouraged that *Computerworld*, a publication reporting on an industry that generally treats women with respect, should be so insensitive as to the message they were sending.

Dorothy Klesher
Oradell, N.J.

Software development in the Stone Age

To accept Francis Walnut's notion, "Lofty ideas don't build systems," [CW, June 15] that software development can be more efficiently addressed by someone who works with a computer in his basement reflects the antiquated practices that have put the state of software development where it is today: in the Technology Stone Age.

Most of the software development done by organizations today requires many participants from the end-user community, management and IS groups.

Second, Walnut's contention that software engineering implies that once the specifications are complete, the creative process is finished is not grounded in reality. Engineering techniques provide a desperately needed dose of discipline to the area of "requirement specification."

Historically, this has been ig-

nored by the systems development community. What have resulted are systems that require a great deal of creativity by implementation staffs to make them functional for the end user.

Third, while there is little to argue with about the importance of software systems implementation, far more errors occur because of incorrect software specifications.

The techniques and tools being put into use today, most notably Information Engineering and I-Case tools, are squarely focused on providing real solutions to real business problems. Better system implementation will not occur until we understand all aspects of software development and adopt the tools and techniques that enable efficient software implementations.

Raymond M. Thompson
Livonia, Mich.

Intellectual property proposal ridiculous

Regarding "The dangers of selective information listing" [CW, Viewpoint, July 13]: A free market economy is not predatory; it is consensual. You may choose to compete, or you may choose not to.

For Randall Kennedy to say that Microsoft must share its hard-won code with any and all comers that simply appear at its doorstep whining about "need" is not only preposterous but also disgusting.

Non-disclosure agreements allow Microsoft to protect its intellectual property with the force of law. Intellectual property, whether it belongs to a corporation or to an individual, deserves — and demands — the same amount of protection as any other property — perhaps more so than other forms of property.

Intellectual property rights promote the greater good. Knowing that the product of your mind will be protected from sponges and moochers will free you to continue to develop newer and better applications, rather than staying with what has already been done.

Kevin Slattery
Mariposa, Calif.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.



White Paper

NETWORK PRINTERS

Until now
network printers
have had the
same fifteen-foot
restriction.

With HP network-ready
LaserJets, you can put your
printers where your users are.

Now you can forget about tethering your printers to some faraway server. Because network-ready LaserJet printers can be placed anywhere along your network. Just plug them in as you would PCs and you're ready to roll. Since you're putting printers by your users, it's as if you're giving them their very own personal printer. Which means they won't have to travel as far for output. Because they're closer to the printer, they can handle some of the routine maintenance tasks, such as paper loading, themselves. Best of all, you won't have to contend with extra boxes, wires or power cables.



HP LaserJet 40 HP LaserJet 400 HP LaserJet 4050

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only \$695-\$949*.

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX, Macintosh, and PC operating systems, call 1-800-732-0900, Ext. 3075 for the HP Connectivity Solutions Guide.



HEWLETT
PACKARD

*For operating HP LIT, Jet 40, and Jet 4050, \$499 or additional software is required. All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc. in the U.S. and other countries. ©1992 Hewlett-Packard Company P21272

Network Printers

Introduction

Local area networks have certainly made their impact felt in the computer world. Although some criticize them for their utilitarian applications — they are largely used to link PCs with local printers and storage devices — the fact remains that localizing printer and memory capabilities has vastly changed the nature of computing.

Liberated from the tyranny of centralized, mainframe environments, users have become more productive within departmental workgroups. This local processing trend is strong and growing; IDC research indicates that, by 1996, users believe that 69% of PCs will be attached to LANs. As is frequently the case with technology trends, there is a downside to the great LAN proliferation: integrating printers is a complex challenge for LAN administrators. Despite the printer's importance to users, they are not a top priority for network operating system suppliers. As a result, printer and third-party vendors who make accessories or enhancement products have inherited the challenge of network administration.

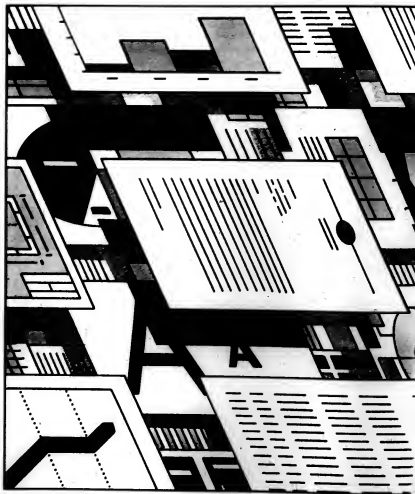
Currently, printer interface and software technologies are years away from offering the ability to transmit any print job and have the system intelligently and transparently print it at the closest available printer. Unfortunately, due to the heterogeneous hardware and software environments being connected, solutions tend to be customized for individual problems. This state of affairs will continue for the next three to five years. Until it is resolved, network configurations will fail to maximize printer capabilities.

There are, however, interim solutions that ease the burden of printer administration. Although these fixes will not do the job over long periods of time, the day will come when print management software, which is currently in its nascent stages, will seamlessly accommodate different data streams on LANs.

This White Paper was written independently of the *Computerworld* editorial department by Angele Boyd, Director of Printer Research, at International Data Corporation.

For more information on the content of this White Paper, or for information on International Data Corporation, please call 508-872-8200.

For more information on the White Paper Program, please call 508-879-0700.





THE RAPID PROLIFERATION OF LOCAL AREA NETWORKS (LANs) AND PRINTERS IS BRINGING THESE TWO PROMINENT TECHNOLOGIES TO A CONFLUENCE THAT WILL INCREASE THEIR UTILITY AND PROVIDE THE COST-EFFECTIVENESS REQUIRED TO JUSTIFY THE GROWING LEGIONS OF DESKTOP COMPUTERS. ■ ALTHOUGH PRINTERS, OBVIOUSLY REPRESENT A FAR MORE MATURE TECHNOLOGY

THAN DO LANs, LASER PRINTERS ARE EXPERIENCING SIGNIFICANT GROWTH. IN PART BECAUSE THESE PRINTERS ARE FINDING THEIR WAY INTO MORE AND MORE CORPORATE NETWORKS. THIS CONTRIBUTES TO LAN GROWTH, WHICH IS STIMULATED BY THE ABSORPTION AND PURCHASE OF NEW AND

NETWORK PRINTERS

MIXED-PLATFORM NODES, SERVERS AND PERIPHERALS SUCH AS PRINTERS. ■ DESKTOP COMPUTERS ARE BEING CONNECTED AT A HIGH RATE AS CORPORATIONS STRIVE TO LEVERAGE THE HUGE CAPITAL INVESTMENTS THEY MADE IN THESE SYSTEMS DURING THE PAST DECADE. ■ IN A FOURTH-QUARTER 1991 IDC SURVEY,

IDC White Paper

of 1,600 U.S. users across several markets (excluding government and education), respondents report 44% of their PCs are connected to LANs. Respondents expect this LAN penetration rate to accelerate, predicting 60% of their PCs will be attached to LANs by year-end 1992. IDC's total market data indicates a similar but slightly tempered trend when portable PCs are included. During 1989, 26% of installed PCs were linked to LANs. That number escalated to 34% in 1990 and 42% in 1991. By 1996, IDC predicts that 60% of PCs will be on LANs.

Additional IDC research indicates that, on the printer side, 30% to 40% of laser printers outputting 11 pages per minute (ppm) or fewer sold to business users are

linked to LANs compared with 65% to 70% of 12-19 ppm models. Twenty-five to 35% of line printers and 50% to 45% of high-speed serial dot matrix printers are destined for LANs.

Interestingly, it seems LAN installations will be motivated by the need to share applications. And in fact, sharing peripherals such as printers is a leading reason for installing networks. A December 1991 *Dataworld* subscriber study finds that printer sharing and storage device sharing are the most cited reasons for installing LANs. These two reasons are cited by 84% and 74% of respondents, respectively.

The nature of the LAN hierarchy is changing. Increasingly, LANs are comprised of different platforms such as workstations, PCs, Macs, minis and mainframes. And a large percentage of LANs are bridged to another LAN, wide area network (WAN), minicomputer, or mainframe. In such cases, printers are accessed across the platform.

PRINTING PROBLEMS PLAGUE LAN ADMINISTRATORS

Integrating printers is a complex



problem for LAN administrators. Although printers are important to users, they remain a lower priority for Network Operating System (NOS) suppliers, who continue to focus on data access, communication and security. As a result, printer and third-party vendors who make accessories or enhancement products are left to solve the network administrators' problems.

"Common problems experienced by end users include excessive waiting times, inaccessible or inconveniently located printers, and problematic network print management features."

Once a printer is shared by at least two users, every printer feature should be remotely and dynamically accessible by each user. In an ideal world, the printer NOS should be able to transmit any print job, regardless of font, data stream or required fonts, and have the system intelligently and transparently print it at the closest available, appropriate printer. Notification of job status would then be

communicated back to the user.

At this point, printer, interface and software technologies are years away from this ideal. This is less attributable to technical limitations than it is to the lack of cooperative development between printer and software suppliers. There are, however, solutions available today that will make printing and print administration more user-friendly to users and network administrators alike.

Currently, the NOS limits user knowledge and control of the print function except in rare instances where there is some degree of two-way communication between printer and network users. More typically, when a print job is transmitted across a network, there is limited control over which printer will be utilized, and no guarantee that the job will be printed in the form requested. At best, the typical NOS notification regarding a specific job informs the user if the printer is busy, shut off or out of paper. "Busy" can mean anything from being truly occupied to some type of printer malfunction.

The NOS may also permit the user to determine and change the job's print queue status within the constraints determined by the LAN administrator. However, the user is usually limited in printer choice, since the LAN administrator has generally predefined print queues for specific applications, print format parameters and particular individuals' access.

Further, the user's ability to determine font type, page orientation (portrait or landscape), or graphics content may not be respected for a number of reasons. For instance, the printer's random access memory may be inadequate to accommodate the requested fonts and graphics. Or, the desired fonts may be unavailable at the printer. In these instances, at a minimum, the user should

Network Printers

be informed that there is a problem, and be given options for dealing with it.

Where possible, the problem should be solved transparently for the user. This could happen in the case of host-fit font substitution. However, due to the wide variety of printers and network environments, the kinds of solutions mentioned here may not be available.

Common problems experienced by end users include excessive waiting times, inaccessible or inconveniently located printers, and problematic network print management features. Most important network print management features involve communication to users concerning breakdowns, job completion, low consumables, and intelligent routing and font downloading.

Unfortunately, due to the heterogeneous hardware and software environments being connected, solutions tend to be customized for individual problems. This state of affairs will persist for the next three to five years. Limitations in printer designs, along with those in application and NCP software printer support, have resulted in network configurations that fail to maximize printer capabilities.

PLANNING TO MEET THE CHALLENGES

With careful planning, network printing problems can be avoided by addressing five areas. They are: capacity, homogeneity versus heterogeneity, printer location needs, software applications, and graphics/images and font usage.

Capacity

Capacity refers to the number of users, the number and size of jobs, and the type and size of media users require. It is important to consider current and future capacity needs.

In assessing capacity the goal is to be able to select the right number of printers, as well as the correct printing speeds and features. It is important to know whether users tend to print many short (up to 10 pages-per-document) jobs, a few long jobs, a mix of short and

long jobs, or small jobs with high-volume bursts at the end of transaction periods.

IDC studies show that the most common speed of network-based printers regardless of network capacity is 8 ppm. This is true despite the fact that such speed is only appropriate for small workgroups of three-to-four users. Although there is an increasing availability of low-cost sub-8 ppm personal, single-user printers, the trend for the LAN printer market is away from such devices.

Largely as a result of cost-conscious management, stand-alone desktop computers are being networked, and the fol-

lowing are some examples of networked desktop computers: IBM, Packard, Image Systems, QMS, Texas Instruments and Toshiba.

When choosing printers, paper handling is important to consider. The larger the number of users sharing the printer, or the longer the print jobs, the greater the need for a printer with large capacity input and output. This situation also calls for output handlers with a job offset capability and/or mailbox-sorters.

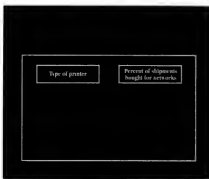
Low-to-mid volume output is considered to be 300-600 pages per person per month, while high volume is 1,000-1,500 pages per person per month. Eight ppm printers often only have one 200-250 sheet input bin, a slightly smaller output bin and no job offset capability. In contrast, the new breed of workgroup printers often has two 500-sheet input bins, job offset and/or optional (additional cost) mailbox sorters.

It is also wise to examine printer use patterns. Sometimes printers are used as convenience copiers. This practice increases print capacity needs, although it may be appropriate under some conditions. A cost-benefit analysis can determine when such conditions exist and whether it makes sense to select personal, rather than shared, printers for networked users. Generally speaking, the lower the user printer speed, the greater the cost to produce a page. More on this can be found in the article appearing in the April 20, 1992 issue of *Computerworld* entitled "Six Steps to Calculate Cost of Ownership."

Thus, giving everyone on the net-

twice the rated speed of earlier 8-11 ppm models, and are designed to be shared by five-to-ten users, but may accommodate up to twenty.

These printers often list for under \$5,000, and typically range from \$2,000 to \$16,000. Their monthly duty cycles — the maximum pages per month recommended by the manufacturer — range from 25,000 to about 50,000, which makes them appropriate for small to midsize workgroups. They are available from a number of vendors including Data Products, DEC, Fujitsu, Genicom, Hewlett



"It is wise to examine printer use patterns."

Sometimes, printers are used as convenience copiers."

low den exists of ownership (consumables, maintenance) of personal page printers are viewed skeptically. The clear trend is toward higher performance page printers that are suitable for sharing by five-to-twenty users.

Fortunately, a new class of laser printers, the most common printing technology shared on networks, is available. At 15-20 ppm, these printers run at

IDC White Paper

work his own four-to-six ppm personal laser printer is less cost effective than sharing workgroup printers on the network. There are times when personal printers are appropriate (i.e., when the user is high ranking, someone who requires stringent security or someone whose job requirements warrant a dedicated printer).

Consideration should also be given to network users who need to print on 11x17-inch (letter) paper, on two sides of a page (duplexing), and envelopes (letter paper is sometimes used for large spreadsheets or for printing pamphlets and newsletters). Not all workgroup printers support 11x17-inch paper. It tends to be either a standard feature or not available at all.

Duplexing is popular in paper-intensive industries. Duplexed output costs less to mail, file, archive and otherwise store. When available, it is usually an option on low-to-mid speed (20 ppm and less) printers. It is usually either standard or not available at all on higher speed printers.

Envelope printing is generally available on personal and workgroup printers. Capacity varies, running up to 75 envelopes, and should be evaluated before making a commitment.

Homogeneity Versus Heterogeneity

Planning for a heterogeneous network with PCs, workstations, and minicomputers that have shared printer capabilities requires understanding the physical interface protocol, and page description language (PDL) requirements for the mixed platforms.

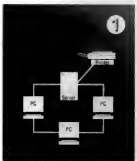
The NOS is simply a conduit for the mixed formats and does nothing to translate them into a specific printer standard. Even when the NOS provides print services to support mixed platforms, the user must still find a printer that can handle them and their PDLs.

It is still common to use a parallel interface to attach a laser printer to a PC server. However, this is changing in favor of direct network interfaces to LANs such as Ethernet and Token Ring. The Macintosh uses either its own version of a serial interface or a localtalk interface.

Direct connection to the network is preferable, so take note of what topology



"...much of the effort spent on developing revenue from server hardware has been replaced by greater emphasis on network operating system software."



ogy (Ethernet or Token Ring) the network employs. When choosing a network printer, be sure the printer's physical interface matches network requirements.

In some instances, simultaneous operation of more than one printer port is desirable, and some printers support this. For example, the parallel and Ethernet ports can be operated together. However, it is important to determine if both ports can switch between PDLs, or whether they are fixed to support the same PDL. HP's PCL and PostScript are the two most common PDLs. In addition, TCP/IP and AppleTalk are two protocols that may also require support.

Novell's Netware 3.11 (the 386 extension to the Netware name has been dropped), which was announced at Network World in February 1991, is an example of vendor support for mixed LANs. Netware 3.11 enables client devices based on DOS, Windows, Macs, OS/2 or Unix to share file and print services on a Netware LAN. Mac support was available on Netware 286 but not the 386 version, and Unix support was not provided at all. TCP/IP support is also integrated in 3.11.

Digital Equipment Corp.'s support for Unix, Ultrix and VMS in DECnet and TCP/IP environments, in addition to its support for PCs and Macs through Pathworks, are other examples of vendor support for complex LANs. Silk's TOPS software offers more than just PostScript printer sharing across Sun workstations, PCs and Macs; it is a complete network operating system that lets each of the three platforms share files in their native mode.

Printer Location Constraints and Network Connectivity Options

A key issue in planning for network printing is deciding where the printers should be located. In the past, technological limitations required that printers be attached to servers. This still presents logistical problems. For example, if the server must be secured after normal working hours, user access is constrained. If a user's system is concurrently acting as both a server and user node, that user will be inconvenienced every time someone comes into his office to print a job.



Until now
waiting for
network
printing has
required the
same amount
of patience.

**HP network ready LaserJet
printers help your users get
their output faster.**

With an HP network-ready LaserJet printer, your users won't be begging for fast output. Network-ready LaserJets avoid parallel bottlenecks and print up to fifteen times faster than ordinary machines. Since your file server is relieved of some print-server functions, your printing network flexibility increases almost immediately. You'll enjoy faster transaction times. Greater security. And increased speed across your entire system.



HP LaserJet 800

HP LaserJet 800w

HP LaserJet 800d

LaserJets become network ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only \$695-\$895*.

For a how-to source that provides information on hooking your LaserJet into your mainframe, minicomputer, UNIX, Macintosh, and PC operating systems, call 1-800-732-0900, Ext. 3073 for the HP Connectivity Solutions Guide.



**HEWLETT
PACKARD**

*For operating HP-UX, Sun OS and SVT UNIX, \$895 is minimum software is required. All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc. in the U.S.A. and other countries. ©1992 Hewlett-Packard Company. P22222-2

There are four major network printer connectivity options to consider:

- server-attached
- shared via user node with spooling done remotely
- shared via user node with spooling done at user node
- direct to network with network adapter

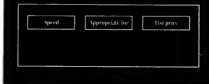
Server-attached

Presently, the most common attachment for LAN printers involves having one or more printers attached to a server responsible for file management, printer support and other services. The server may be a computer or a dedicated hardware box. At present, the principle NOS vendors can support a range of server printer ratios from five-to-eight or five-to-twelve through either serial, parallel or remote attachments.

This configuration is a legacy of the earlier days of NOS, when server connections were the only type of printer support that network operating system software provided. The NOS vendors, at that time, were much smaller companies, unable to fund a wide variety of system options. They also realized that offering other attachment options would only have stimulated third-party vendor competition.

Over the past three years, much of the effort spent on developing revenue from server hardware has been replaced by greater emphasis on NOS software. As an example of this phenomenon, consider Novell's withdrawal from the server market and DEC's Source Kits, which provide the necessary host software to drive DEC's Printserver printers from non-DEC Unix servers. With this new emphasis, the capability to support alternative printer attachments not tied to specific server hardware offers a competitive advantage for NOS vendors.

Tied to this has been the printer and printer accessory vendors' desire to make sure printers can be attached anywhere on networks. This has been such a major issue that several vendors, including Intel, Lexmark and Gaielle, have developed very small network adapters that are transparent to the NOS and allow the printer to be physically at-

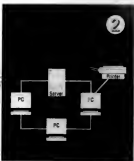


tached anywhere on LAN cabling. The printer's serial or parallel interface is plugged into the network adapter, which, in turn, attaches to Ethernet or Token Ring network cabling.

Shared via User Node with Spooling Done Remotely

The second-most common LAN printer configuration is comprised of a workstation, usually a user's node, whose printer can be accessed by several other users on the network. The workstation does no spooling, and as a result, only one person can print at a time. Multitasking environments such as Unix and Windows prevent user interruption during print jobs.

However, in other environments, when a printing job is being processed, the node's ability to concurrently process other software is appreciably slowed. For this reason, the number of users with ac-



cess to this printer is limited, usually to no more than three to five people.

A variation of this set-up is to have spooling done on a remote server. This allows print jobs to be simultaneously sent to the printer. In this variation, one or two printers are attached to the workstation. Novell, the most popular NOS supplier, now provides support for remote printing from the server, except under Entry Level Network (ELS). ELS does not support remote printing because it supports only four to eight users.

Shared via User Node with Spooling Done at User Node (Concurrent Server)

This third LAN printer setup employs a concurrent server — a workstation used as a server providing print spooling and file service as well as end-user capacity. This configuration is not common because it suffers from the same problem as the shared node's printer mentioned above: the node's ability to concurrently process other software needs is appreciably slowed. This configuration can also present a data security risk. If an application crashes, the server function of the workstation is similarly affected.

Direct to Network with Network Adapter

This is the least common configuration, but one that is increasingly being used because of its advantages. It consists of a printer with a built-in Ethernet or Token Ring interface connected directly to the LAN. By separating the file server function from the printing (spooling) function, data security is better addressed. Also, direct-connect printers benefit from enhanced transmission speeds on Ethernet and/or Token Ring. This provides a significant benefit for large Postscript, high-resolution, color- and graphics image-intensive files being sent to a printer or a typesetter/imager.

Traffic on the network and the interface to the printer are bottlenecked when it comes to speed of printing. When multiple print jobs are sent simultaneously across the network to the server, there is

Network Printers

a delay while each job gets into and out of the server's print queues. More time is lost if the printer is attached to the server via a parallel interface instead of Ethernet or Token Ring. The contrast in communication speed is vast — Ethernet's maximum speed is 10M bit/sec, and Token Ring's is four or 16M bit/sec, while a parallel interface allows only 10K bytes/sec.

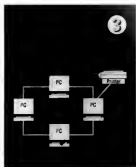
Since there is a direct relationship between an interface's performance and its price, high-speed Ethernet and Token Ring interfaces which list between \$700-\$900 are commonly used for higher cost printers. Accordingly, higher speed printers (15 ppm+), color devices, and high-resolution devices (600 dpi+) are appropriate candidates for those two cabling schemes.

A number of printer vendors have begun to offer Ethernet and Token Ring interfaces as options on their workgroup printers. These include HP, Toshiba, QMS, Apple and DEC. In addition, third-party vendors such as Intel and Castelle offer external network adapter cards for printers. These allow the connection of two-to-four printers per card.

Software Applications

Knowing the applications and their versions is critically important. One of the most frequent problems encountered by users is their job not printing at all, or printing incorrectly. This frequently happens because the user unknowingly sends the job from an application configured to move output in a specific printer emulation format, to a printer whose current set-up does not match the incoming format. Network printers must be able to print and switch between the emulations supported by applications.

The ability of a printer on a network to seamlessly handle multiple data streams has high utility to both users and network administrators. This is particularly valuable in mixed networks where there is a need to support multiple data streams. Postscript, PCL, DEC ANSI, IPDS, Epson, and line printer have the leading page description language emulation market shares. Currently, because of the inability of most laser printers to automatically switch emulations, a PostScript printer is often set up to accept only PostScript while a separate printer may be designated for PCL output.



This limitation is changing as several non-impact printer suppliers including HP, QMS, DEC, Tektronix and Talaris offer printers that sense the incoming data stream and print them accordingly. Adobe, which developed Postscript, has just announced support for emulation switching.

Graphics/Images and Fonts

As graphics make output more sophisticated in terms of images and fonts, the amount of data being transferred across the network increases. This has implications for the amount of required printer memory and network bandwidth required to transfer the job to the printer.

With fonts there is also the issue of

WYSIWYG, the ability to see on the screen exactly what will be printed. To support the growing sophistication of user output, it is important to choose network printers that have memory expansion capabilities, WYSIWYG fonts, support for high bandwidth interfaces, and GJIT-based image compression capabilities.

Most workgroup/network printers have generous memory expansion capabilities. While many offer a number of fonts on the printer, not all are WYSIWYG fonts. PostScript and PCL support image compression, the ability for a printer to decompress data is also expected to become important.

NEXT GENERATION NETWORK PRINTING

Several printer and NOS characteristics build a case for print management software on the network. There is a need to transparently manage and distribute printing resources such as fonts, printer data streams and paper handling capabilities to users across the network. Print management software, currently in its nascent stages, will seamlessly handle different data streams by either locating an appropriate network printer that can handle the necessary data stream or translating it into a bitmapped code that is sent to a printer conveniently located near the requesting end user. Print server software from Insight Development Corporation offers a number of these capabilities.

It makes sense for print management software to assume much of this responsibility for groups of lower cost, lower performance printers. This way, it is not necessary to justify the incremental cost of the added intelligence and two-way communication interfaces needed to allow remote and transparent user access. Given that many LANs today are still relatively small — averaging twelve nodes — less expensive printers will continue to proliferate, making a compelling case for intelligent print management software.

In addition to reducing costs, printers running intelligent print management software can charge back to departments based on individual departmental usage.





It's never been easier to manage your entire printing network.

With HP network-ready LaserJet printers, you can monitor your network right from your desk.

HP network-ready LaserJets are actually seen as additional nodes on your network. Which allow you to manage from one location and take full advantage of the features in your network management software. There's even a new diagnostic feature which lets you track the success of data transfer between your server and a network-ready LaserJet.

Network-ready LaserJet printers were engineered in cooperation with NOS vendors. So they work seamlessly with your current network and operating system, including Novell Network (Novell-certified), SCO UNIX® Open, Microsoft® LAN Manager, and IBM LAN Server. Or the HP-UX, SunOS, and SCO UNIX® operating systems. Even Macintosh environments.



LaserJets become network ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only \$695-\$895.*

Network-ready LaserJets easily hook into your mainframe, minicomputer, UNIX, Macintosh, and PC operating systems. So to better oversee your network, see an HP network-ready LaserJet today.



*The operating HP-UX, SunOS, and SCO UNIX, IBM on additional software is required. All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc. and the U.S. and other countries. Macintosh is a registered trademark of Microsoft Corp. © 1992 Hewlett-Packard Company 000000

COMPUTERWORLD

Editor in Chief

Bill Lelwre

Executive Editor

Paul Glick

News Editor

Alan Hirt

Technology Editor

James Connolly

Assistant News Editor

Patricia Neale

Senior Editor

Elizabeth Horvath, Networking

Management Handbook, Personal Computing

Neil Morgue, Management

Maryanne Johnson, Workstations

Joanne M. Neider, Networking

Johnnie Anderson, Systems & Software

Garry N. Ray, Application Development

Book Editor

Michael Fitzgerald

Staff Editors

Mehmet-Corin Bulbul

Candice Halderman

Christopher Lindquist

Ken S. Nish

New Products Editor

Lori Davidson

Features Editor

James Reiter

Section Editors

Joseph Maglio

Judy Zetser

Mary Joanne Strubel

Jesse Christman

Assistant Editors

Julie Neale

Kelly E. Dwyer

Assistant Researchers

Colleen McLean

Sofia M. Smith

Research Manager

Michael L. Sullivan-Transer

Research Coordinator

Kevin Bowden

Product Research Director

Dana Sider

Chief Copy Editor

Catherine Capone

Assistant Chief Copy Editor

Alice Leach Kelly

Features Copy Editors

Kimberly A. Smith

Steven J. Condon

Copy Editor

Lori McFarren

Ann McCreary

Stephen P. Davis

Christina Acarici

Design Director

Nancy Kiesel

Graphic Designer

Tom Marbach

Design Assistant

Janet Gonslow

Graphic Specialist

Michael Sagnier

Stephanie Frazier

Contributor

Rick Tormsen

Office Manager

Linda Gargano

Editorial Assistants

Lorraine Wiatel

Carmel Brown

Aleksandra Skala

Rights and Permissions Manager

Sharon Bryant

Book Issues

Margaret McJannet

News Bureau

Mid-Atlantic

(202) 1947-1350

Washington, D.C.

Thomas Davidson, Correspondent

(202) 347-6718

Miami, Fla.

Micki Bette, National Correspondent

(305) 347-6718

New York, N.Y.

Garry M. Anderson, Senior Correspondent

(212) 347-6718

West Coast

(415) 347-6718

Jesse Burstein, Senior Staff Editor

James Dale, Senior Correspondent

Mark Halper, Senior Correspondent

Brenda Craven, Editorial Assistant

(901) 532-4277

McGraw-Hill, Correspondent

Malcolm

(708) 867-4433

Elle Brooker, Senior Staff

Editorial Office

Box 9171, 275 Columbia Road

Farmingdale, NY 11735

(516) 877-0700

Fax (516) 877-0931

McGraw-Hill Computerworld

Subscription: 0000-6666-1002

Programming no longer enough

BOB FRANKSTON



There are too many programmers, just as there are too many lawyers. Both professions feel they are major contributors to productivity and the economy. Clients and users accept both of them because they do jobs that we don't know how to do or don't want to do themselves.

I'm not a lawyer, so I can't speak for lawyers. But I am a programmer.

The term "programmer" is pretty broad, even within the domain of computer software.

I'm using the term for the act of laying out the hoops that the computer must jump through and working at it until it executes the jumps perfectly, or at least frequently.

Ultimately, however, the point is not the fancy hoops but the task that the end user (who's that?) is trying to accomplish. The goal is to go from the user's specification to a program. In fact, what is the difference between the

spec and the program? Why shouldn't the process be automatic?

If the process were automatic, the user would write a specification and the computer would execute it: no programmers to argue with. This would avoid the frustration of the user who misunderstands the task but must deal with a programmer who insists that the part number must also double as a sector number (in octal) on disk.

It hobbles the user to have to rely on this other person to accomplish every mundane task



Having to call a programmer in to get any work done is just as bad as having to call a lawyer for every business deal. It is a symptom of something gone awry, rather than a solution.

There's a good parallel for what I'm suggesting in the evolution of telephone service. At one point, professional operators always handled the complete process of placing a call—from specifications to making the connections. Eventually, however, the volume of calls grew so much that, short of turning the entire population into operators, there was no way to deal with it. So diala were placed on the telephones and people were told to place the calls themselves.

Of course, it takes expertise to properly operate the phone network or construct applications. There is always the danger of accidentally dialing an 011 and reaching Australia instead of Boston or of calling a 900 number.

But for the most part, people would rather risk an occasional foray to Australia than be encumbered by the services of intermediaries.

A user armed with a spreadsheet might

confuse precision with accuracy; user armed with desktop publishing software might discover new degrees of font abuse. But eventually, most of them will learn how to do what they need to do.

Some users go beyond basic use of the tools; they lash pieces together and pipe data and commands around. This can get exceedingly complex and ugly. Rather than being offended by the messiness of these systems that come from these tools, however, we should be impressed by the effort and inventiveness.

We should also pay attention to the message of these constructions: Users can be inventive and apply tools (even beyond their design point) in order to accomplish their tasks.

The end, not the means

As users learn how to do their own programming, we must become more attentive to what the programming accomplishes and not just focus on the process.

We, too, can use our skills to accomplish a task, rather than writing a program. Rather than "programmer," our business cards might read salesman, architect, journalist, product designer or hydraulic engineer.

Have I taken my own advice?

Of course not. I'm still a programmer. But one day I promise to learn a trade.

Frankston has been programming for 30 years and may be too old to change. Vailack is his best known program.

You can grab his systems by sending mail to CW@frankston.com.

Benchmarks aren't all they would have us believe

MURRAY STEIN

Did you buy your last car because of its horsepower rating? Does a pro football coach automatically sign anyone who can run a 4.3 40? Has the world's fastest human ever won the de fakster?

If you answered no to any of the above, chances are you already understand what many computer marketers don't: Computer users want balanced performance, not just MIPS, MFLOPS or even SPECmarks.

I'm not even going to open the can of worms regarding the relative validity of various benchmarks. A few years ago, people started using MIPS figures, so MIPS were replaced by SPECmarks. Now the SPECmarks rating is taking flak because it isn't perfect either.

But who's kidding whom? When it comes to performance evaluation, absolute objectivity isn't possible—and it's not nec-

essary. People who use computers in their work know that overall system performance in their application is what's relevant, not a single performance number.

Making the cut

What's becoming clearer and clearer to computer buyers is that a benchmark is only useful as a ballpark estimate. It can tell you within an order of magnitude how fast a system is compared with other systems running the same test, and that can help you shorten your prospective vendor list.

How does a system's I/O performance stack up? Processing speed won't get you far if the I/O is terrible.

And is the system optimized for your application? A computer that has a rocket of a CPU can still be as slow as a swamp turtle when it comes to actual transaction speed because the hardware, the operating system or the network hasn't been tuned

to the application.

The questions can go on until the mind boggles. And the frustrating fact is that every benchmark number—MIPS, SPECmarks, megabytes per second, greps, ops, you name it—tells you precious little about the one thing you really want to know: how the system handles your particular application.

There isn't even a consistent correlation between types of applications and performance benchmarks.

Trial and error

No, there's no way around it: The only way to get a clear sense of how a system will perform in running your application is to load your application or its nearest facsimile on the system in question and try it out. Or look for systems vendors that design and tune their computers to run applications rather than benchmarks.

Unfortunately, such an orientation is rare today. Face through any technology-oriented magazine and you'll see the ads and the claims—faster than a speeding bullet, more SPECmarks than a locomotive, able to

crunch large data sets in a single clock cycle.

Some would no doubt say this focus on numbers is an attempt to exploit the ignorant, the way a stereo salesman toots witts per channel to the rich novice. I don't go that far.

I simply say that benchmarks are a distraction as well as a means of avoiding the difficult

COMPUTER USERS know that overall system performance in their application is what's relevant, not a single performance number.

fact that computers, like people or even like cars, are complex machines.

In fact, maybe there's something in that comparison. Perhaps computer vendors, like automakers, should be required by law to warn consumers that "actual performance may vary."

Stein is a computer technology consultant at PostSource Communications in Princeton, Ariz., and a frustrated equipment purchaser.

We make the most complete And we stand behind

When your job description includes buying portable computers by the tens, twenties, thirties and hundreds, you naturally want

to know a bit more about the company that makes those computers than you'll discover by reading their spec sheets.

(Although our spec sheets do make excellent reading.)



T2200SX

For example, we thought you might like to know that in the sometimes here-today, gone-tomorrow world of personal computer companies, Toshiba is the market leader in portables—part of a \$33 billion company with an R&D budget larger than most companies' annual revenues.

Not only do we sell more portable computers, we make the most complete line of portable computers, designed to meet



T6400DX

every conceivable need. From our 5.5-pound T2200SX business notebook that fits sideways into half a briefcase to our remarkable new T4400SXC, the first 486 active matrix color notebook

computer on the market.

Each portable computer in our line has been engineered for easy



T3300SL/120MB

integration into your existing system—providing all the important ports you need, in addition to the unique expandability option of our DeskStation IV, which comes complete with everything necessary to turn your Toshiba portable into a desktop computer.

T6400SXC



We also provide the broadest range of accessories—adapters, modems, memory cards—to make your portables (amazing as it sounds) even more useful.

line of portable computers. every one of them.



T4400SX

Of course, one of your principal concerns is reliability. Fortunately for you, it's also one of ours. That's why

we've always gotten consistently high marks for reliability. (Just ask our hundreds of thousands of satisfied users.)

In the event that you do need service, we provide the kind of support you'd expect from a company like Toshiba.



T3300SL/80MB

For example, every one of our portables comes with our standard international warranty, covering parts and labor for one year in 24 countries worldwide.

T6400SX

We also offer a 7-day/24-hour electronic bulletin board, providing access to



T4400SX/Gas Plasma

Toshiba technical support as well as to utilities that can enhance your computer's performance.

On-line telephone support and assistance from Toshiba technicians are always just an 800 number away.

There's even an 800 number for the international traveler.

In fact, there's even an 800 number for you, right now, today.



T4400SX/LCD

It's 1-800-289-1400. Just call and we'll be glad to send you more information. Or arrange for an evaluation of your needs. Or refer you to your nearest Toshiba dealer.



Which, after everything we've told you, does seem like the logical next step.

In Touch with Tomorrow
TOSHIBA

Andersen's Foundation For Cooperative Processing CASE product does what other CASE vendors only promise: designs and generates code for client/server applications.

DATAMATION - SEPTEMBER 1, 1991

Considering how much has been written about CASE tools for cooperative processing, we thought you would appreciate an executive summary.

ANDERSEN
CONSULTING
Software Products

For the full story on FOUNDATION for Cooperative Processing including case histories, call 1-800-458-8851. Outside the U.S. or Canada, 1-312-507-5161.

DESKTOP COMPUTING

PCs AND SOFTWARE • WORKSTATIONS

Notebook computers are tools of the trade at New York Life

ON SITE

BY MICHAEL FITZGERALD
CIR 11/19/92

NEW YORK — It has been just three years since New York Life Insurance Co. racked up its first computer-driven policy sale. But what a three years it has been.

From those modest beginnings, New York Life's notebook computer-based sales automation effort has grown to include 8,000 of the firm's 9,000 agents. The volume of computer sales has jumped from less than 1% in 1989 to more than 30% today.

"That totals more than 120,000 policies during the last month alone, according to Richard E. Nelson Jr., vice president of agency systems."

The foundation of the automated sales effort is a combination customized and off-the-shelf package called NYLExpress, or

New York Life Expert Resource Sales and Service, which the company began developing four years ago.

NYLExpress puts a variety of sales tools at the agents' fingertips for use in calculating premiums, estimating benefits and calculating options. The biggest benefit of the software is that it allows agents to close the deal earlier in the sales cycle without getting stuck in the "I'll get back to you on that" cycle.

The current NYLExpress barely resembles the initial release of 1989. Based on Microsoft Corp.'s Windows 2.0, that release's two applications consumed 20M bytes of

hard disk space.

Today, five insurance applications are installed on the notebooks, spanning the entire selling cycle. They occupy almost 60M bytes of hard disk space. Some 4,000 New York Life agents use luggage-portable — largely Prospects from NEC Technologies, Inc. — but are shifting to notebooks as storage capacities approach that of the luggables.

New York Life has both home-grown and third-party applications and has spent much of its effort tying them together. The system now automatically updates relevant information, such as customer records, across soft-

Insurance on the go

N.Y. Life has steadily increased its applications portfolio since it introduced portables to its agents in 1989

| | June 1989 | June 1992 |
|------------------------------------|------------------------|---------------------------|
| Base laptop unit | 25MHz Data S Turboport | NEC's Ultralite 25 SL/25C |
| Chip | 386 | 386SL |
| MHz | 16 | 25 |
| RAM | 640K bytes | 4M bytes |
| Hard drive | 40M bytes | 120M bytes |
| DOS version | 3.0 | 5.0 |
| Windows version | 2 | 3.0 |
| Sales products covered by software | 2 | 9 |
| Software size | 25M bytes | 65M bytes |
| Number of offices using | 2 | 171 |
| Applications processed (per month) | 30 | 13,583 |

A 9 Chart Janell/Statistica

ware modules through the use of a central database.

In-house work is done using Nanuetuck Corp.'s Clipper and database from Borland International, Inc.

New York Life chose the early version of Windows in 1988 be-

cause information systems management thought it would grow with the applications, Nelson said. He opted for a steady "one-piece-at-a-time" development approach.

The agents have driven much

Continued on page 47

Suite success puts new pressure on software vendors

But corporate customers love the price tag

BY ROSEMARY HAMILTON
CIR 11/19/92

There is a lot more to application suites than their pretty packages.

Suite sales, which are now the source of fierce competition between Lotus Development Corp. and Microsoft Corp., are fundamentally changing the way some customers buy software and vendors make money.

"I think suites are great for us," said Craig Goldman, chief information officer at The Chase Manhattan Bank, N.A. in New York. "The price for applications" vs. the perceived benefit is often too much for people to try it. If the price is cheap, users can really understand the value."

What a bargain

For customers, suites require a far broader commitment to a single vendor than many have made before, but they also give them a bargain-basement price that is hard to beat.

Microsoft and Lotus are now offering four-application suites at a list price that is half the software's total value in pieces. Some customers recently contacted said looking in with a particular vendor is less of an issue these days because the competi-

ing product lines have increasingly added similar features. More importantly, it reduces support hassles by reducing the number of contacts.

Jude Gartland, a senior vice president at Shearson Lehman Brothers, Inc. in New York, said selecting a suite is a "matter of which horse you are going to bet on," but it is less likely that you will make a bad choice. His company has purchased suites from Microsoft and Lotus.

"I think you can just about flip a coin on this now. Whichever spreadsheet you think is the best now, it could be just the opposite a year from now," Gartland said.

For software suppliers, however, suites are not so sweet — at least for the near future as they drive down the per-application revenue.

With suites, the market share game is no longer about piling up unit sales alone. Instead, the idea is to bring in customers who commit to not one but several applications and will hopefully provide a bigger per customer revenue stream over several years.

This idea is appealing enough to have spurred intense competition between the two personal computer software giants. Microsoft launched the market

early three years ago with the first release of Office and pushed ahead with no real competition until April of this year, when Lotus introduced SmartSuite.

Robert Weiler, a senior vice president at Lotus, said Microsoft essentially called the shots on SmartSuite's pricing. With Office established in the market at

Cheaper in volume

Software suites are selling well, but low prices are pressuring vendor margins

| Lotus | Microsoft |
|------------------------|------------|
| 1-2-3 for Windows | Excel |
| SmartSuite for Windows | PowerPoint |
| SmartSuite for Windows | Office |
| SmartSuite | Office |

*Volume from 10-user package

\$750, Lotus came in at \$795, even though Weiler said the applications could have easily sold for \$495 as a packaged deal.

Meanwhile, Borland International, Inc. and WordPerfect Corp. are reportedly engaged in discussions to bundle their applications in a suite.

Observers said suites are currently selling for as little as a few hundred dollars. Corporate Soft-

ware, Inc., a reseller based in Canton, Mass., said it offers an upgrade deal to customers of any Lotus application to Lotus SmartSuite for \$319.

"It will be tough for [vendors] to sustain margins that they've gotten used to," said Tim McCollum, an analyst at Dean Witter Reynolds. "They have to

seeking from lower average unit prices, particularly in the [Microsoft] Windows area."

"We offer [technical] services to our customers, so we make up some money that way," said Ed McGuggan, corporate accounts product manager. "Also, there's an opportunity in that the customer is purchasing three applications, and we're very much involved in the upgrade business."

Lengthy relationship

Lotus Vice President Frank Logan said suites represent a "change in the nature of the business and a mature market."

"We look at customers in terms of having a long-term relationship with them, and I expect to get some money from them each year as opposed to trying to get the total value the first time you sell a box and then forget about it," Logan added.

"As long as you are selecting from a group of vendors who are strong and are going to be here for the long term, I don't see a terrible disadvantage to suites," Goldman said.

Yet not all customers are convinced. Jeff Newman, an assistant vice president at Barclays Bank PLC in New York, said the suite prices are impressive, but "I haven't spoken to anyone here who needs all of that software at once. People are still mixing and matching."

WINDOWS VIEW

Jesse Berst

SOS to the rescue



Call it Windows' dirty little secret. The Micro-soft operating environment makes life easier for end users. But it makes life a lot harder for your technical support staff. Windows users typically work with multiple programs, making problems more complex to diagnose. Windows also pushes computer resources to the limit. Troubleshooting configurations or system bottlenecks quickly show up.

"It is tough to make all these programs live together when you start using Windows with DOS with memory managers and so on," explains Martin Fox, a technical officer at ChemBank.

Fortunately, a new CD-ROM product called SOS. On Site (SOS) lights the way to the work load. Fox, who supports 800 workstations and several LANs with a staff of five, tested SOS prior to its official release in April and continues to use it.

"This information is gold when it comes to configuring and troubleshooting," he says. Produced by Ziff-Davis'

Computer Library Group, SOS provides a single source for information on products from many different vendors. I've had a chance to look it over, and I think it deserves consideration by corporate help desks.

The quality of a reference tool depends on the quality of the data. Ziff went right to the source for the information on SOS. It contacted leading manufacturers (including Microsoft) and obtained documentation, technical notes, bug fixes and other support information. To that it added the text of technical newsletters and books. Then it indexed it and put it all on a CD-ROM together with a search-and-retrieve engine.

Cutting costs

Much of the information on SOS is also available from the CompuServe on-line service. If you need only occasional help, that's the cheapest way to go. But CompuServe charges by the minute. If your technicians spend much time there, the monthly fees quickly add up to hundreds or even thousands of dollars. Even if you throw in \$750 for the cost of a CD-ROM drive, you can still get started with SOS for less than \$2,000. At that price, it should easily pay for itself if it saves your support staff 40 hours during the first year.

When I set out to write this column, I intended to compare and contrast two separate products. Unfortunately, one of the two companies has apparently gone under. M'aidex, mak-

er of a similar CD-ROM product called HelpDial, is no longer answering its phones (at least when I tried). HelpDial was distinguished by its exclusive focus on Windows products and by its native Windows interface.

By contrast, SOS still labors under a clunky DOS interface. Although Fox says he likes it, I don't. I think it is cumbersome and old-fashioned. Fortunately, Ziff is working on Windows and Macintosh interfaces for shipment this year.

SOS is a bit pricey at \$1,295 for the single-user version and \$4,995 for a five-person concurrent license. Remember, though, that the price includes 12 monthly updates. For instance, after Windows 3.1 was introduced in April, the May SOS update already had several hundred tech notes about 3.1.

In addition, Ziff is signing up new manufacturers as fast as it can, so each monthly disk usually adds some new products. SOS already supports several dozen DOS and Windows programs. OS/2 support will appear soon, and the company hopes to have Macintosh support by the fall.

Judging by the experience of Fox, you may save that much time in the first month or two. "When it's time to solve a problem," he says, "we make the CD-ROM our first line of defense."

Berst is the publisher of Redmond, Wash.-based "Windows Weekly," a monthly briefing service for software executives and corporate technology managers.

Fast graphics bus sparks excitement, risk of confusion

Local bus has board makers rushing to market

BY MICHAEL FITZGERALD
OF STAFF

The hubbub in the personal computer graphics world these days is echoing from an emerging technology called the local bus that promises big performance boosts for graphics-intensive applications.

"I think it's going to totally revolutionize how graphics work and are used in the workplace and the home," said Jake Richter, chief technologist at Panacea, Inc., a maker of software acceleration tools based in Londonderry, N.H. "It's probably the most important thing that's happened to PC graphics."

For graphics, it's an absolute must-do," agreed Jon Peddie, president of Jon Peddie Associates, which publishes the "PC Graphics Report" in Oakland, Calif.

In basic terms, the local bus is a shortcut to main memory. In PC systems today, graphics and other subsystems perform slowly because the peripherals and add-in cards that drive these data-intensive applications are connected only indirectly to system memory. This is a particular problem for machines that use the snail-like AT bus for input and output.

A local bus lets peripherals bypass the I/O bus and go directly to main memory, greatly speeding up data movement. Most practical estimates add as much as 133M bytes of data per second can be transferred in a system with a local-bus design. However, Richter said, the AT bus will give perhaps 2M byte/sec.

Complex concept

But even the technology's supporters concede that the local-bus concept does not easily lend itself to explanation.

"It's very complicated," said J. David Schuler, technical marketing manager for the architecture development laboratory at Intel Corp. in Beaverton, Ore. Intel recently announced its local-bus effort. Peripheral Component Interconnect (PCI).

Several local-bus implementations are available or in progress at laboratories: the new PCI from Intel; the VL bus from the Video Electronics Standards Association (VESA); and several products from small companies such as Opti, Inc.

Under PCI, the motherboard gains a local bus that lets peripherals run faster, but it does not run add-in boards and hence is not expandable, according to analysts. It was designed to work on numerous architectures beyond Intel's, though the silicon is not due out until sometime early next year.

Supporting Intel's initiative are IBM, Compaq Computer Corp., NCR Corp. and Digital Equipment Corp., among others. The Intel-specific VL bus is

A LOCAL BUS lets peripherals bypass the I/O bus and go directly to main memory, greatly speeding up data movement.

already in some systems, largely from in-house clones, and analysts said that numerous systems with the VL bus will appear at Comdex/Fall '92.

Perhaps the major difference between the two is that VESA's VL bus will support add-in cards. Intel will leave the decision to support add-in cards up to the individual systems makers.

The whole issue of the local bus gets confusing in part because the buses do not necessarily conflict. Some companies support both VL and PCI Opti, which has its own local bus, also supports the VL bus.

Individual vendors have their fingers in different pies, too. For instance, Northgate Computer Systems, Inc. will release a line of systems, the VFX line, in the middle of next month that will offer local-bus architecture using a discrete chip set, a la the Chips and Technologies, Inc. Wingate approach.

Some observers, such as Peddie, think they think that only one of these various flavors of local buses will survive (Peddie is betting on the VL bus). Others said room exists for more than one implementation.

"I think PCI will be the choice for expensive, higher-end systems, such as multimedia systems, while the VL bus will be the consumer-level local-bus solution," Richter said.

One thing everyone agrees on: The local bus will drive application speeds way up.

Sales automation key target for Snap

BY CAROL HILDEBRAND
OF STAFF

With Version 5.0 of Snap sales automation software, the Snap Software Group of Sales Technologies, Inc. hopes to tap into what it sees as a market poised for takeoff.

The company, which is owned by The Dun & Bradstreet Corp., is aiming its namesake product at automating, organizing and integrating sales and marketing and service information.

Divided into six sections, the package allows a firm's sales and marketing teams to track clients and contacts. The sections start with General Information, which has phone numbers, addresses and other account information. The Contacts section lists every contact at a particular company whom sales and marketing have talked to. The Activity section lists the entire history of a particular account.

The Comments module allows free-form textual comments to be entered about an account, and the Products section catalogs sales and leads by company. A Ticklers component

stores a package of follow-up items.

Jim Leavay, the company's chief executive officer, said that a recent Harris poll of Fortune 1,000 chief executive officers and chief information officers named sales automation as its No. 1 project over the next

market for sales force automation software at \$100 million.

Gillen also said that technology in the arena tends to lag behind the cutting edge in terms of user interface. Snap has addressed that with a spruced-up look that features pull-down menus and pop-up messages.

Michael Scott, corporate MIS manager at Ranco in Rockville, Md., pinpointed the interface as the package's biggest plus. A feature called Snapshot lets a user bring up a summary of what is in each of the six sections. "Before, you had to physically go into the section to find out what was in there," she said.

"It was like having tunnel vision. Users can also choose contact and account views, which automatically filter information by whether it has a contact name attached to it. "If you enter something about a product, it will force you to select a contact within the system," Scott said.

Since Version 5.0 is available now, in either single-user, volume purchase or network licensed version. Pricing is \$1,500 per single license, with volume discounts available.

"IT'S VERY HARD to evangelize a new market when there's not a lot of name recognition there."

CLARE GILLAN
IDC

five years.

Clare Gillan, an analyst at International Data Corp. (IDC), said the sales force automation software market is still trying to take off, partly because of the lack of a prominent leading vendor. "It's very hard to evangelize a new market when there's not a lot of name recognition there," she said. IDC estimates the 1991

Notebooks at New York Life

CONTINUED FROM PAGE 45

of the expansion in software, Nelson said.

"This is an end-user-driven project. We can point at almost every step to where an agent suggested something," he said. Agents have helped keep it alive, too.

"We put versions out we should have been shot for," Nelson said. "We've had lots of failures; we've made some horrible mistakes, but we've survived them because the agents have stuck with us."

Primary problems have been with database integration and speed, he added.

Honesty is best policy

Agents stuck by NYLExpress, in part because New York Life was honest about problems, according to Nelson.

It did not hurt that the project also had a high-level champion: Executive Vice President Les Gummil.

Gummil "has been our biggest supporter and our fiercest

critic, too," Nelson said. "We couldn't have built this without inside and outside help. And you've got to say thank you to people."

New York Life has had to listen to its agents: They pay \$1,500 for the software in addition to the hardware they buy at a discount from the company.

The arrangement is structured in such a way that if the value is not there, the project would fail, Nelson said.

In 1993, New York Life expects that more than 50% of its policies will be sold and processed electronically, according to Nelson. Meanwhile, other efforts in IS have yielded clear benefits.

Nelson, who came to IS from the pension department at New York Life, said the company has

been able to reduce the number of field offices from 500 to 175, primarily through IS efficiencies. All the offices have access to New York Life's General Office and Agent Linkage System, he said.



Vice President Nelson: New York Life listens to agents' feedback

Makes my day While the product has become much more seamless and is getting used much more — last month, New York Life had its first 1,200 day, when more than 1,200 applications came in electronically — plenty of agents still do not use all the software available to them, according to Nelson.

Nelson approaches that issue with characteristic enthusiasm. "There are lots of things we can do to expand the use," he said. "A lot more we could do to sell it."

huge development effort; a long-term goal of dominating the operating system market; a desire to control the operating system on every piece of its hardware, thereby making connectivity and integration of pure IBM hardware easier. Whatever it is, you can bet it isn't small-time.

Meanwhile, Microsoft has no high-end operating system. It has DOS and an advanced DOS shell called Windows 3.1. I don't care what Microsoft says — it isn't an operating system. Windows NT 3.1 is an operating system. You boot to NT. Any DOS prompt you see under NT is an emulated one. Windows NT 3.1 is not Version 3.1 of NT, however. This is market-speak at its purest.

Microsoft is fond of saying that NT is the result of months of work and that much was learned from OS/2 development.

So what? It is fundamentally different than anything Microsoft has put on the market before. Sure, the interface looks the same, but putting the same dashboard on a Ford Escort and a Porsche 959 does not change the fact that the guts are not of the same world. Calling it Version 3.1 won't make NT any less of a first generation.

For the next few months, IBM will try to get OS/2 2.0 into as many hands as possible, and Microsoft will do its best to keep people in line for NT. And having two companies the likes of IBM and Microsoft beating each other up to gather customers can only be good for users.

Linquist is a Computerworld staff writer.

NEW PRODUCTS

Peripherals

BuTeK Corp. has introduced the BT-545S, a fast Small Computer Systems Interface (SCSI)-2 hard disk.

The product gives up to 10M bytes/sec. synchronous and 7M bytes/sec. asynchronous SCSI data transfers. The BT-545S was designed for high-speed, 100-interleave master and data acquisition environments and for systems running multitasking operating systems such as Unix, Xenix, Novell, Inc.'s NetWare and OS/2. An on-board ROM BIOS from Phoenix Software Associates Ltd. offers single-tasking DOS operations and built-in Format utilities.

BT-545S is 100% IBM XT/AT-compatible and can interconnect between IBM Personal Computer/AT and SCSI peripheral devices. The BT-545S costs \$449.

BuTeK
4151 Burton Drive
Santa Clara, Calif. 95054
(408) 492-9090

Maxopix Corp. has introduced the Tahiti IIM, a multifunction optical disc drive.

Tahiti IIM has a read/write cache buffer to increase data transfer rates of on-line storage applications. Available buffer sizes include 256K, 1M and 4M bytes. With the 4M-byte cache, data transfer rates have been measured up to 2.5M bytes/sec. Also doubling the performance of standard 256K-byte buffer configurations in certain applications. Sustained data transfer rates of more than 1M bytes/sec. can be supported, and the drive has an "in-factory" Small Computer Systems Interface-2 interface to ease system integration.

Tahiti IIM costs \$4,045.
Maxopix
25200 Junction Ave.
San Jose, Calif. 95134
(408) 954-9700

Mountain Network Solutions, Inc. has introduced FileSafe TD-250, an internal tape backup system for IBM Classic (AT) Bus and compatible computer systems.

Storing up to 250M bytes of data on a single cartridge, the product uses the QC-86 format with advanced error recovery and correction techniques. According to the company, the TD-250 can back up 80M bytes of data in approximately 20 minutes and can also connect to the computer through the floppy disk. FileSafe is included with the tape drive, featuring automatic installation, menu or command line operation and on-line, context-sensitive Help screens.

FileSafe TD-250 costs \$399.
Mountain Network Solutions

240 E. Hacienda Ave.
Campbell, Calif. 95008
(408) 378-4300

Systems

Future Systems Solutions, Inc. has developed the SpeedCache Plus 4.0.

SpeedCache Plus 4.0 is cache software for compact disc/read-only memory drives and was designed to add speed to both DOS and Microsoft Corp.'s Windows environments. SpeedCache Plus 4.0 boosts the DOS performance by more than 4,000% and Windows by 1,000%, according to the company. This release offers write-back caching, which allows a personal computer to multitask during disk writing, and also features complete DOS device-level compatibility.

SpeedCache Plus 4.0 costs \$129.95.

Future Systems Solutions
0420 South 500 East
Bluffton, Ind. 46714
(219) 447-8204

Software application packages

Agfa, the imaging division of Miles, Inc., has started shipping Desktop Styles, a collection of 20 TrueType fonts for Microsoft Corp.'s Windows 3.1 personal computer users.

Agfa TrueType fonts are for use in memos, business letters, proposals, presentations and reports and were designed to improve the quality of electronic and printed communications. This collection consists of TrueType versions of eight fonts resident in the Hewlett-Packard Co. LaserJet III series of printers, for use in the Windows 3.1 environment.

Desktop Styles costs \$79.
Agfa
100 Challenger Road
Midfield Park, N.J. 07060
(201) 440-2500

Above Software, Inc. has introduced Golden Retriever, an information navigator for Microsoft Corp.'s Windows operating environment.

Users can create, store, track and fetch spreadsheets, letters, memos, proposals and a variety of other applications. Spreadsheets, documents and other data are organized and stored by subject, project, author and address, the same way that a paper document would be filed. File names can be created, and Golden Retriever has a system of pointers that list a file in several folders, under the same or different name, without duplicating the original document.

Golden Retriever costs \$99.
Above Software
2609 White Road #200
Irvine, Calif. 92714
(714) 851-2283

COMMENTARY

Chris Lindquist

A race worth watching

The operating system race hasn't begun in earnest yet, but Microsoft's lead is so dominant that it's almost as if the engine on Windows NT a couple of weeks ago at the Win32 Professional Developers Conference and gave notice that it will be ready for the chase.

If for no other reason than sheer size, the Win32 Professional Developers Conference was impressive. Like it or not, Microsoft should be commended for being able to lure more than 4,000 developers to San Francisco for a look at an operating system that won't ship commercially for another five to eight months. And most of them seemed to be doing just that — looking.

Microsoft certainly did plenty to aid their investigations, including supplying dozens of hands-on workstations and technical workshops as well as handing out free copies of the development kit of prerelease NT to everyone who showed up. Granted, the DOS and 16-bit Windows support in the prerelease are not up to par, but this was a dose dedicated to NT as a 32-bit operating system, not a

DOS emulator.

Microsoft needs to prove that it can win. And it seems strongly committed to making NT work. Microsoft can afford this because it has a long-term goal: If Windows NT can become the de facto operating system of the future, Microsoft's other products can ride the wave to the tune of billions of dollars.

If you own the operating system, you have an advantage in applications — period. It doesn't matter if the only contact your programmers have is when they eat lunch together; that's still more insight than competitors get. Whether you or I, or more importantly, the Federal Trade Commission thinks that situation is anticompetitive or simply good business is irrelevant at the moment. It's making Microsoft money.

Counting losses

IBM can't say that. There are plenty of indications that IBM isn't making much — if any — money on OS/2 2.0. IBM admits that a good number of OS/2s — and some 90% of those sold through its 800 number — are going out the door for \$49 as competitive upgrades to Windows. People I've talked to at other software firms say IBM can't begin to cover its development and production costs at that kind of price.

IBM also can't use the argument that selling OS/2 2.0 sets it up for future software sales. For now, at least, IBM doesn't sell much PC software.

So why is IBM pushing so hard? It could be several things: the sheer momentum of a

Harvard Draw for Windows: Robust, good price

Technology Analysis — a roundup of expert opinions about new products. Summaries written by product research coordinator Derek Slater.

Harvard Draw for Windows 1.0 is a strong illustration package for business users, reviewers said. The product, from Harvard Graphics-creator Software Publishing Corp., omits a few design tools found in its high-end competitors, but it costs less.

Ease of use: Reviewers noted a few minor quirks in the interface, such as the need to select a tool to resize a highlighted object. Overall, though, they said Harvard Draw is straightforward.

Drawing/editing capabilities: Harvard Draw provides a relatively complete tool set, including text wraps, Bezier curves, rotation tools and a good polygon tool. Each illustration can have 99 layers. Missing are some three-dimensional image extrusion tools and Pantone color support.

Speed: Reviewers found Harvard Draw to be exceptionally fast, both in drawing functions and in importing other graphics file formats.

Overall value: Harvard Draw is a very good value at \$595. It costs \$100 less than high-end competitors while still offering a fairly robust set of tools and features, combined with outstanding speed.

Software Publishing's Harvard Draw for Windows 1.0

| Reviews | Ease of use | Drawing/editing tools | Speed | Documentation | Service and support | Overall value |
|--|------------------------------|-----------------------------------|-------------------|---------------------------------|------------------------|----------------------------------|
| InfoWorld 12/29/91 | Very good | Numerous conveniences | Excellent | Very readable | Very good | Very good |
| PC Magazine 1/28/92 | Straightforward | Some really special effects | Very fast tracing | NC | NC | More affordable |
| PC Week 11/11/91 | Awardwiner for certain tasks | Lacks some text handling features | Speedy | NC | NC | High-caliber set of features |
| Byte 4/92 | Snappy interface | 99 layers | Speedy | NC | NC | Professional |
| Computer Shopper 5/92 | Intuitive | Has script language | NC | Extensive but tedious in places | Competent and pleasant | Solid but short of greatness |
| PC User 11/20/91 | Easy text editing | Tried graphics manipulation | Fast | NC | NC | Heavy price tag |
| Users | | | | | | |
| Mark Allen, Korn Properties Services, Inc. | ■ | ■ | ■ | ■ | NC | Output is often difficult |
| Bill Browder, U.S. Department of Transportation | ■ | ■ | ■ | ■ | ■ | Works well with Harvard Graphics |
| Michael Khatwintze, Shady Pheasant, New Media Research | ■ | ■ | ■ | ■ | ■ | Very handy |

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewers' evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC, No comment.

Vendor background information

Software Publishing reported revenue of \$43.4 million and profits of \$4.1 million for the quarter ended March 31. The same quarter in 1991 yielded revenue of \$30.5 million and no profit. Michael Khatwintze at research firm Sanford C. Bernstein rated the company's short-term performance as fair and long-term stability as good.

Software Publishing responds

Steve Lane, assistant product planning manager:

Ease of use: We haven't gotten a lot of objections on the resizing tool from end users. However, we will probably change it to make it more consistent with Harvard Graphics.

Value: Harvard Draw is competing with the high-end products. We wanted to go out in our first release with an aggressive price.

Windows Draw: Fine for most users

Micrografx's Windows Draw 3.0

| Reviews | Ease of use | Drawing/editing tools | Speed | Documentation | Service and support | Overall value |
|---|----------------------|----------------------------|---------------|---------------|---------------------|-----------------------------------|
| InfoWorld 12/29/91 | Very good | Satisfying layout features | Very good | Very good | Very good | Good alternative |
| PC Magazine 12/31/91 | Revisiting interface | Comprehensive filters | NC | NC | NC | Bargain price |
| PC Week 11/11/91 | One of the easiest | Searchable library | NC | NC | NC | Attractive |
| Byte 4/92 | Intuitive | Ingenious rotation tool | NC | Excellent | NC | Superb value |
| PC Sources 3/92 | Unintuitive | Lacks multiple layers | NC | Comprehensive | First-class | Reasonable price |
| Computer Shopper 4/92 | Unfamiliar | High-end features | No draft mode | Good | NC | Sophisticated |
| Users | | | | | | |
| Greg Friedman, Southern California Edison Co. | ■ | ■ | ■ | ■ | ■ | Very good for occasional user |
| Randy Drager, Tandem Computers, Inc. | ■ | ■ | ■ | ■ | ■ | Network installation is an ordeal |
| Analyst | | | | | | |
| Khatwintze, Shady Pheasant, New Media Research | ■ | ■ | ■ | ■ | ■ | A great program |

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewers' evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC, No comment.

Vendor background information

Micrografx reported sales of \$47.5 million and profits of \$5.1 million for the quarter ended March 31. Revenue and profits rose 60% and 24%, respectively, from the same quarter last year. John Maxwell III at Soundview Financial Group rated the company's short-term performance as fair and long-term stability as good.

Micrografx responds

Paul Grayson, chairman and chief executive officer:

Speed: There is only one editing mode, which is in full color with all fonts and so forth. We find having a wireframe editing mode is just confusing to the user, and the speed difference is very minute.

Documentation: Everything is combined into one very tutorial-oriented manual.

Business users who need sharp illustrations but do not require professional design tools will welcome Micrografx, Inc.'s Windows Draw 3.0, reviewers said.

Ease of use: The product offers a simpler, more intuitive interface than Micrografx's high-end Designer graphics package, reviewers said.

Drawing/editing capabilities: Windows Draw includes freehand tools, editing functions such as rotation and text wrapping, and an extensive collection of editable clip art. It lacks support for printing cyan, magenta, yellow and black color separations and has no auto-trace tool.

Speed: The program lacks a wireframe drawing mode, which slows some operations. Overall, reviewers said Windows Draw is comparable to other graphics packages in speed.

Documentation: There is no quick reference manual, but reviewers said the strong on-line Help compensates for this. Tutorials are included in the user manual.

Service and support: Free phone support is available 24 hours a day during the week. Micrografx also offers bulletin board and CompuServe support.

Overall value: Priced at \$149.95, Windows Draw is an excellent value, reviewers said. Graphics professionals will want to look for more powerful alternatives.

WORKGROUP COMPUTING

LANs • SERVERS • SOFTWARE FOR GROUPS

IN BRIEF

Goal revises training tool

■ **Goal Systems International, Inc.** in Columbus, Ohio, released improved versions of its automated training tool for microcomputer and local-area network platforms. Both *Phoenix/Micro* and *Phoenix/LAN* Versions 7.3 include improved graphics and better reporting capabilities, the company said.

■ **Best Power Technology, Inc.** in Needham, Wis., is working on two uninterruptible power supply products that support Simple Network Management Protocol. The products are based on its CheckUPS II power monitoring and unattended shutdown software for Novell, Inc.'s NetWare Management System.

■ **Volkswagen AG, Ingersbach Corp.** and **Control Data Systems, Inc.** signed a joint marketing and technology deal for developing engineering systems for the automotive, aerospace and discrete manufacturing markets. The engineering systems will use a consistent product data model that will be accessed by design, engineering and manufacturing groups.

IBM, Chipcom form superhub partnership

The two companies will pool resources to develop, market and build multiprotocol hub products

BY JOANIE M. WEXLER
OF STAFF

RALEIGH, N.C. — IBM's little-known efforts to migrate its Token Ring customers to multimedia applications got a shot in the arm from the firm's eleventh-hour partnership with smart hub vendor Chipcom Corp. last week.

The two firms roughly outlined an intent to combine worldwide marketing and manufacturing efforts in the "superhub" market, although no product specifics will be announced until year's end, the vendors said.

The term "superhub" refers to smart hub products that allow network administrators to dedicate a full local-area network's bandwidth to each user and switch traffic across a high-speed backbone. The nailed-up bandwidth afforded by switching alleviates the delay-sensitive problems of running multimedia applications over shared-bandwidth LANs.

Superhubs are transitional products to multimedia-oriented Asynchronous Transfer Mode (ATM) networking.

IBM said its relationship with Chipcom forms the foundation of its strategy for entering the ripe multiprotocol hub market — a key product area the industry has been hounding IBM to enter.

"It is because they are so late entering this market that they need to buy into the technology," said Janet Hyland, director of network strategy research at Forrester Research, Inc. in

Cambridge, Mass.

Until last week, IBM's multimedia migration path consisted of testing and demonstrating desktop videoconferencing applications — such as training videos — running in a client/server scenario within a 16M bit/sec. Token Ring LAN. However, this setup will likely be of limited use, as users could simply run down the hall to meet face-to-face or congregate in a room for a common training session, analysts noted.

Of more likely appeal is a desktop-to-desktop, inter-LAN

Token Ring videoconferencing application that the vendor has been testing in "tens of U.S. customer sites" during the past year, said Mike Murphy, the senior planner in IBM's network systems area responsible for the vendor's multimedia strategy. However, the application, dubbed "IBM Person-to-Person," is not yet an announced product and may not be released, Murphy said.

The goal with the Token Ring multimedia efforts — which are happening alongside the firm's development of stand-alone

ATM cell switches — is to tide over IBM's large installed Token Ring customer base while high-speed ATM network infrastructures evolve. IBM said it just passed the 5 million mark in sales of Token Ring adapter cards.

However, an analyst familiar with IBM's strategy said that while the Token Ring architecture outlines those of other shared-bandwidth LANs for carrying voice and video, the industry is more keen on the dedicated LAN approach.

"The IBM Token Ring multimedia efforts are a Band-Aid solution," said Dave Passmore, a vice president in the local-area communications group at Gartner Group, Inc. in Stamford, Conn. "Since ATM switching via the LAN-per-user scenario is not far away, I would recommend they focus their efforts there."

IBM and Chipcom did not specify whether their joint development would include hub-based ATM products, although Chipcom has long advocated the technology. Chipcom and Bytex Corp. are among the hub vendors best positioned for the transition to ATM. Their auto-configuration software allows users to segment networks logically, and they are set up to implement the LAN-per-user form of networking (see story page 55).

Murphy acknowledged that IBM has per-port auto-configuration development in the works, but he did not comment as to whether it is Chipcom or IBM technology.

A closer look

With its Token Ring-oriented multimedia equipment, IBM has been able to send up to 10 simultaneous 1.2M bit/sec. sessions between client and server within the same 16M bit/sec. Token Ring, said Mike Murphy, the IBM senior planner heading up the company's multimedia efforts.

The same circuitry found on a stand-alone coder/decoder sits on an IBM video card in a Personal System/2, he explained. A camera hooks into a \$1,995 IBM Action Media II video card, which includes playback capabilities. A card version allowing users to receive video costs \$890, IBM said.

Compression algorithms turn voice and video into digitized data for transport over the LAN. The more predictable token-passing access method of Token Ring networks renders the topology more suitable for such applications, according to Dave Passmore, a vice president at Gartner Group, Inc. in Stamford, Conn.

Passmore also pointed out that the Token Ring standard includes a little-used feature that allows applications to make priority reservations for certain network traffic — a useful feature for implementing delay-sensitive voice and video.

JOANIE M. WEXLER

\$146 743 0716 9 316 2

By the end of this week Computerworld readers will have spent over **\$46.7 Billion** on Information Technology this year — representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD

The Newspaper of IS

Source: IDC Research Services, Fall 1991

Political minefield could sabotage OSF

CONTINUED FROM PAGE 1

erful companies behind the OSF has spurred his own primary vendor and vocal OSF critic — Sun Microsystems, Inc. — into more rapid innovation and product enhancements to counter the OSF's plans.

Yet will the OSF be around for the long term?

Its three largest sponsors — IBM, Digital Equipment Corp. and Hewlett-Packard Co. — are adamant that it will.

They said their commitment to the foundation's future is solid, and their patience with OSF's struggle to reach self-sufficiency will last.

Open space

"If OSF were to go away, I think there would be a significant void" in the open systems market, Saranga said.

"Without OSF there, I would fear fallback to proprietary solutions from the various vendors," said Ted Hannas, chairman of the OSF's end-user steering committee.

Even users who are unimpressed so far by the OSF's product rollout — the Motif graphical user interface and the OSF/1 Unix operating system — acknowledged some of the organization's accomplishments. They include the following:

- Providing a competitive alternative to Unix System Laboratories, Inc. (USL) and Microsoft Corp. for source-level technology.

- Establishing the request for technology process, a collaborative research and development model previously untried in this industry. It enables competing com-



President David Tory ships OSF into a turbulent open systems sea.

panies to submit products as candidates for inclusion in OSF technologies.

- Encouraging the penetration of Unix into commercial environments.
- Complementing the standards process and spurring further innovation in the Unix market.

"It is not the job of standards to advance technology, but someone does need to get the technologies out there," said Steven Jenkins, a software architecture engineer at Jet Propulsion Laboratories in Pasadena, Calif. "I believe OSF has bitten off some of the really hard problems in distributed computing. It's not coming as fast as anyone would like it, but it's beating the alternatives."

"OSF has done a good job in getting

people in this industry to stop killing each other and work in forums," said Chris Stone, president of Object Management Group, Inc. in Framingham, Mass., which counts dozens of OSF members among its 270 member firms. "They've proved they have some staying power."

The anticipated onslaught next year from Microsoft's Windows New Technology (NT) advanced operating system is helping to encourage a more unified front among Unix and open systems vendors these days.

The warming relationship between the OSF and USL — one-time rivals — bears witness to this worry.

"Everybody is just scared spitless of the notion that NT is going to own all the desktops in the world," said Tony Carrato, a member of the OSF's end-user committee and a principal at Mile-High Information Services, Inc., a consultancy in Denver. "If you really look at NT, it does look an awful lot like Unix."

Search for independents

Users and analysts agree that a crucial component of the future viability is its relationship with independent software vendors, who so far have shown only a passing interest in the OSF's activities.

"We would really like to have a coalition of [independent software vendors] similar to the coalition of users at OSF," Hannas said.

Continued on page 51

Kernel, compiler on deck at institute

The OSF Research Institute, with dual headquarters in Cambridge, Mass., and Grenoble, France, also has dual rising stars in its high-tech heavens.

The primary one is the OSF/1 Micro-Kernel, the next generation of the OSF/1 operating system.

The secondary star is a futuristic compiler technology that will enable a single version of a shrink-wrapped software application to run on several different hardware platforms — offering users the ultimate in software portability.

This advanced compiler technology, called ANDF for Architecture Neutral Distribution Format, has been something of a political hotcake at the OSF, however.

"System vendors are still very protective of their software catalogs, and the larger ones are reluctant to level the playing field," said Paul McGuckin, an analyst at Dataquest, Inc.

Two months ago at the foundation's summer

meeting in Munich, Germany, user members were dismayed to learn that ANDF development was being moved to the back burner at the OSF's European headquarters, largely because of U.S. system vendor indifference. No one at OSF had consulted members of the end-user steering committee about the change in plans.

"They overlooked a valuable channel with us, but they're

really bright people. They won't do it again," said Tony Carrato, a member of the end-user committee.

Fortunately for OSF, USL stepped in with an undisclosed amount of financial support that reenergized the flagging development program. Through joint work with OSF and the UK's Defence Research Agency, USL intends to bring out a commercial ANDF product in 1993.

"My goal is that people can invent hardware that does new and wonderful things without the boat anchor of a vast amount of software," he said, said Ira Goldstein, vice president of research and advanced development at OSF.

Of far greater interest to the OSF sponsor companies is the OSF/1 Micro-Kernel. Based on Carnegie Mellon University's Mach 3.0 kernel, the microkernel is a highly secure, scalable version of OSF/1 that is particularly well-suited to massively parallel or clustered high-performance systems. It makes its commercial debut later this year inside the Intel Corp. Paragon supercomputer.

As a stripped-down version of the kernel — with networking, file systems and virtual memory management removed — the microkernel can also run "multiple personalities" or other operating systems such as OS/2 or MS-DOS in the user space above the kernel.

MARYFRAN JOHNSON



OSF's Goldstein

Ready for launching

PASADENA, Calif. — At the Jet Propulsion Laboratories (JPL), everything promised by the OSF's DCE is already working on its 300-node ground data system network.

So why is JPL, writing so anxiously for the OSF's suite of system management tools?

"DCE will actually solve a lot of problems for JPL," said Steven Jenkins, a software architecture engineer at JPL, the part of NASA that does robotic exploration of the solar system. "We invented much of what's in DCE back in the bad old days when you did this stuff yourself, but our solutions aren't necessarily as portable, general or powerful as we'd like them to be."

Built to span multiple platforms running Unix and proprietary operating systems, DCE is a set of services, tools and utilities that enable distributed computing.

"When you look at the problems DCE was set up to solve — remote procedure calls, timing, security, multithreading — those are the big problems we ran into with our network," Jenkins noted.

While there is nothing technically brilliant about DCE technology, it does mark the first time an integrated set of these services has been widely accepted as an industry standard — before any product is even available.

Later this year, DCE technologies will start showing up as layered components in new operating system releases from IBM, DEC, Hewlett-Packard and other vendors.

"Our plans are rather extensive in this area," said Mike Saranga, president of OSF's board of directors and assistant general manager of systems, structures and management at IBM. "DCE will appear in AIX [IBM's Unix variant] this year and in OS/2 and MVS after that."

Yet even more critical than DCE to end users and the OSF sponsors is the follow-on set of system and network management software called the DME.

Although IBM is doing the final integration of DCE, the OSF decided to keep DME work in-house. Foundation officials said they have changed the integration process to avoid some of the snafus with DCE, which is running at least one year late.

"With DCE, there was too much inspection and coordination going on too far downstream in the technology merge process, which slowed down the assimilation of all the different contributions," said Ted Hannas, chairman of the OSF's end-user steering committee.

"With DME, they're not trying to do a mass integration but a step-by-step integration, so it's not everything coming together at one point, with all that additional complexity,"

MARYFRAN JOHNSON



Mike Price
IS Director
Burlington Coat Factory

"Confusion over the past few years... led to reluctance in embracing open systems."



Sheri Anderson
Senior Vice President of
Production and System Services
Charles Schwab

"The OSF is 'becoming more realistic but not less visionary.'"



Tony Carrozza
Principal
Mike High Information
Services

"Everybody is just scared spillover of the notion that [Microsoft's Windows] NT is going to own all the desktops in the world."

Continued from page 50

Paul McGuckin, an analyst at Dataquest, Inc., said widespread industry acceptance of the OSF's Distributed Computing Environment (DCE) and Distributed Management Environment (DME) at de facto standards — before anyone is even using the products — is perhaps the most astonishing feat in the organization's brief life span (see story page 50).

Finding a niche

"I think OSF has found its place as a supplier of much-needed middleware," McGuckin said. "That is where their success will be."

For users, the true test for any new software technology is application is application deployment and support. At DHL Systems, Inc. in San Mateo, Calif., distributed computing needs are handled today with Sun's Open Network Computing (ONC) products.

"I'm using ONC not only because it's the only choice I have today but because Informix and the third parties are supporting that interface," said John Scharber, manager of hardware and software systems at DHL Systems. "Just having product out there won't be enough: OSF will need it supported by all my vendors."

Users and analysts alike said the OSF's greatest strengths are in its continued work as a technology integrator. They see the foundation as acceptably neutral ground to determine which products have the potential to become de facto stan-

dards in mainstream commercial accounts.

If the OSF did not exist, many users said, something like it would still be necessary to develop the consensus among competing vendors needed to achieve open, distributed computing.

"I think they've realized that if they don't hang together, it's pretty clear what else will happen," Carrozza said.

As the OSF matures, it is facing the common problems of any software supplier, but with some additional burdens. Once products are out the door, customers want maintenance, support and assurance that the technology will keep advancing. At a for-profit company, that scenario calls for growth in the product development groups.

Yet the static size of the OSF — and the uncertainties of its future funding — means that the organization must shift people from the more established technologies, such as Motif and OS/1, to emerging ones such as DCE and DME.

After the release of OSF/1.1 a few weeks ago, for example, managers began assigning engineers to other projects.

Changing positions

"If we have a fixed set of resources and we're changing from one technology emphasis to another, those resources change, too," OSF President David Tey said.

Such changes require the OSF to rely increasingly on the resources of its sponsors, who are now being asked to provide more help in the way of engineering, testing and quality assurance.

"I think OSF is learning a lot about delivering products and working with customers," said Sheri Anderson, senior vice president of production and system services at Charles Schwab & Co. in San Francisco. "They're becoming more realistic but not less visionary."

"The time has arrived to deliver on the promises," added Warren Hoffman, a principal consultant at Du Pont Co. in Wilmington, Del. "We don't want it to drag into 1995."

NEW PRODUCTS

Unix

Raxco has released Bart, a backup and recovery software package for Unix networks.

Bart is a high-speed backup technology designed for heterogeneous networks that have a demand for interoperability. According to the company, Bart has full network support, reliable file recovery and fast backup capability. Bart can back up any disk on any machine on a Transmission Control Protocol/Internet Protocol network, whether the device is local or remote.

It can also generate on-disk indexes that are used to locate files, eliminating the need to process the entire tape, the company said.

Licensing fees range from \$399 to \$49,995 depending on configuration.

Raxco
Suite 200
2440 Research Blvd.
Rockville, Md. 20850
(301) 258-2620

Workgroup software applications

Erdas, Inc. has announced Erdas Imagine GIS (geographic information system) and imaging processing software for Digital Equipment Corp.'s DECstation 5000 Model 100 and 200 series workstations.

The product is a fully integrated, application-driven GIS package that allows users to combine, enhance and manipulate data layers to be used in the X/Motif environment. Imagine offers an image viewer, spatial and statistical modeling, a graphical point-and-click user interface and advanced image processing. A Map Composer is included, and users have the ability to view images at any scale.

Prices start at \$10,000.

Erdas
Suite 300
2801 Buford Highway
Atlanta, Ga. 30329
(404) 248-9000

Electronic mail

NBS Systems, Inc. has introduced Enterprise E-Mail Systems, a line of integrated mainframe-based and local-area network-based electronic-mail systems.

The Total Office Support System (TOSS) series of client/server-architected E-mail systems consists of TOSS/Lan, TOSS/W, TOSS/PC and TOSS/Host. TOSS/Lan is a system server that provides E-mail among individuals in any size workgroup. TOSS/W provides a Micro-Soft Corp. Windows interface for users accessing either TOSS/Lan or TOSS/Host servers and runs under native MS/DOS, Windows, Unix and OS/2. TOSS/PC provides a Windows-type interface for personal computer off-line operation.

Prices range from \$100 to \$18,000.

NBS Systems
15 Mullen Road
Enfield, Conn. 06082
(203) 741-2244

Even in a throwaway society, some things aren't that easy to replace.

...your mainframe software expertise, for example.

We'll help you brave the new world of open system computing by leveraging your existing IBM mainframe user skills.

uni-SPF™
uni-REXX™
uni-XEDIT™

Includes Dialog Management Services

Easy ports for existing applications.

Familiar full-screen editor.

the workstation group
the business choice for open systems

wrk/grp
the workstation group

HIRING?

Advertise regionally in Computerworld's September 7th Salary Survey issue and get half off the following week in the Job Satisfaction Survey issue. Ad Closes: September 3.

800-343-6474

©1991

People have always b together. Unfor computing enviro

The good news, however, is there's a solution. Lotus Notes[®] software. A breakthrough technology that's helping organizations overcome the technological roadblocks found in most mixed computing environments, which often stop good ideas from ever going anywhere.

You see, Lotus Notes is a flexible workgroup computing environment that signals a better way for end users to work together...while giving IT and MIS professionals a better way to more effectively leverage their company's existing hardware, software and network investments.

Let's face it. Many companies have spent fortunes on technology over the years and have begun to wonder just how well it's paid off. With Notes, the benefits are immediate. Companies can finally begin connecting people and ideas for more informed decisions. Regardless of group size, location or network configuration.

What's more, Notes is an extremely flexible environment that makes the development and

deployment of all kinds of custom applications a relatively quick and easy process. Some typical applications include lead tracking, product planning, brainstorming, account management, reference libraries, call reporting, quality management and more. There are small and large

How People Are Using Lotus Notes

| | |
|----------------------------------|-------------------------------|
| <i>Strategic Planning</i> | <i>Project Management</i> |
| <i>Sales Management</i> | <i>Sales Presentations</i> |
| <i>Industry Newswire</i> | <i>Policy Handbook</i> |
| <i>Customer Service Tracking</i> | <i>Electronic Mail</i> |
| <i>Forms Routing</i> | <i>Financial Profiles</i> |
| <i>Quality Management</i> | <i>Telemarketing</i> |
| <i>Contract Library</i> | <i>Technical Support</i> |
| <i>Correspondence Tracking</i> | <i>Job Postings</i> |
| <i>User Group Discussions</i> | <i>Credit and Collections</i> |

companies, in fact, that have bought Notes to solve a specific problem, only to discover that it answered other needs as well.

Lotus Notes runs on the most popular networks (Novell[®], IBM[®], Microsoft[®], Banyan[®] and DEC[®]). And,

Lotus Notes is an innovative workgroup computing environment designed to increase

©1989 Lotus Development Corporation. All rights reserved. Lotus, Lotus Notes and 3.5 are registered trademarks of Lotus Development Corporation. Novell is a registered trademark of Novell, Inc. IBM and MS-DOS are registered trademarks of International Business Machines Corporation. Microsoft is a registered trademark of Microsoft Corporation. Banyan is a trademark of Banyan Systems, Inc. MicroVax is a registered trademark of Digital Corporation. DEC is a registered trademark of Digital Corporation. Lotus is a registered trademark of Lotus Development Corporation.



een open to working rtunately, their onments haven't.

in Windows™ and OS/2. Just as we've done with our 1-2-3® spreadsheet, we'll soon have Notes running on all major platforms, including Macintosh® and UNIX.® Again the objective is to provide users with a seamless way of working together whether they're in the office or on the road. No matter what platform they use.

There's even more good news. You can get started with Notes for less than \$500 per user. In fact, when companies looking into Notes realize how much they can improve their productivity without major expenditures of time and money, their decision becomes a whole lot easier.

So, if you're waiting for the light to turn green, why wait any longer? Just call us at **1-800-872-3387, ext. 6707.** We'll help you get things moving right away.

Lotus Notes

For the Notes Seminar nearest you,
call 1-800-828-0541.

your organization's productivity.

Lotus, Lotus Notes, and Notes are trademarks of Lotus Development Corporation. IBM is a trademark of International Business Machines Corporation. UNIX is a trademark of AT&T Intellectual Property. Microsoft and Windows are trademarks of Microsoft Corporation. 1-800 is a trademark of Digital Equipment Corporation. See the bottom of the page for more information.

Moving To UNIX? Stop Here First.

Join Computer Associates And
Hewlett-Packard At
A Free Half-Day Briefing For
CIOs, IS Executives
And UNIX System Managers.

*"Shows how CA and HP
make downsizing to UNIX practical for
mission-critical applications."*

Bernard Guldin, GM, General Systems Div., Hewlett-Packard Co.

"An excellent source of answers."

Assistant Director, Grumman Data Systems

"Fantastic."

VP, Data Admin., Options Clearing Corp.

The experts agree: if your future includes UNIX, this seminar is a must. "Overcoming The Barriers Of Downsizing To UNIX" helps you avoid the pitfalls and migrate safely to open systems.

Topics discussed include: solutions to thirty challenges you'll face managing UNIX; security methods for distributed environments; case studies on downsizing mainframe database applications; powerful new systems administration solutions; and practical action plans for making it all work.

Don't miss this important educational opportunity.
Register today!

| | | | |
|-----------------|-----------------------------|--------------------|-----------------------------|
| Albany, NY | 8/20, 10/15, 11/19 | New York | 8/11, 10/6, 11/10 |
| Albuquerque | 9/8, 11/19 | Oklahoma City | 8/11, 10/22 |
| Atlanta | 8/20 | Omaha | 9/9 |
| Austin | 7/30, 8/25, 11/5 | Orlando | 8/19 |
| Baltimore | 9/17 | Parsons | 8/20, 10/6, 11/17 |
| Baton Rouge | 10/28 | Phoenix | 8/6, 9/1, 10/14, 11/12 |
| Birmingham | 9/22 | Piscataway | 9/15 |
| Boise | 8/12, 9/10, 10/20, 11/18 | Pittsburgh | 9/17 |
| Boston | 8/13, 10/8, 11/12 | Portland | 9/17, 11/24 |
| Buffalo | 8/26 | Raleigh | 9/30 |
| Charlotte | 9/16 | Richmond | 8/27 |
| Chicago | 8/27 | Rochester | 8/25, 10/20 |
| Cincinnati | 8/25, 10/20 | Salt Lake City | 8/5, 9/3, 10/13, 11/11 |
| Cleveland | 8/26, 10/21 | San Francisco | 7/24, 10/20 |
| Columbia, SC | 10/8 | San Jose | 10/6, 12/9 |
| Columbus, OH | 9/16 | Seattle | 8/13, 11/4 |
| Dallas | 7/28, 8/26, 10/8, 11/3 | Shrewsbury | 11/19 |
| Denver | 8/4, 9/2, 10/15, 11/10 | Springfield, MO | 10/6 |
| Detroit | 9/1 | Stamford, CT | 8/18, 10/13, 11/17 |
| El Paso | 8/13, 10/21 | St. Louis | 9/2, 10/15 |
| Fort Lauderdale | 9/1 | Syracuse | 10/27 |
| Fort Wayne | 9/8 | Tallahassee | 10/29 |
| Grand Rapids | 8/11 | Tampa | 9/23 |
| Greenville, SC | 9/15 | Topeka | 11/18 |
| Houston | 7/28, 8/27, 10/6, 11/4 | Tulsa | 9/9, 11/17 |
| Indianapolis | 9/3 | Valley Forge | 10/9, 11/18 |
| Jackson, MS | 10/1 | Washington, DC | 8/26, 9/24, 10/15, 11/19 |
| Jacksonville | 11/11 | (Falls Church, VA) | 8/26, 9/24, 10/15, 11/19 |
| Kansas City, MO | 9/10, 10/14 | (Rockville, MD) | 8/20, 10/8, 11/12 |
| Little Rock | 11/12 | Richita | 8/27 |
| Los Angeles | 9/4, 11/17 | CANADA | |
| Louisville | 9/9 | Calgary | 9/24 |
| Madison, WI | 9/2 | Edmonton | 9/28 |
| Memphis | 9/30 | Halifax | 10/8 |
| Miami | 10/7 | Montreal | 9/15 |
| Milwaukee | 9/3 | Ottawa | 9/17 |
| Minneapolis | 8/26 | Regina | 9/30 |
| Mobile | 10/20 | Toronto | 10/6, 11/17 |
| Nashville | 9/16 | Vancouver | 9/22 |
| New Orleans | 9/24 | Winnipeg | 10/2 |

To Register,
FAX This Form To
1-516-342-5734.
Or Call Dana Williams
At 1-800-225-5224.

Name(s) _____ Title(s) _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone Number(s) _____
Seminar Location _____ Date _____
☐ I Cannot Attend, But Please Send Seminars Materials.

ENTERPRISE NETWORKING

INTERNETWORKING • SERVICES • NET MANAGEMENT

COMMENTARY

Elisabeth Horwitt

Internet users unite



While Democrats went through the motions of choosing a presidential candidate in New York earlier this month, classic democratic consensus-seeking was taking place at the Internet Engineering Task Force (IETF) meeting as some 700 vendors, developers and users argued and schmoozed their way to agreement on proposed enhancements of TCP/IP, SNMP and related protocols.

Internet users tend to be technically savvy types from the engineering, vendor, academic and government communities. They tend to have ponytails and wear jeans and work shirts, not business suits.

Executives from DEC and other big companies, along with the engineering user types, put off their company manners, put on their work shirts, rolled up their sleeves and got some important business done at this meeting.

Active participants

The amount accomplished was particularly impressive given the number of people involved. The IETF standard-setting process is open to the whole Internet community, which numbers hundreds of thousands if not millions.

Unlike more sedate standards bodies, such as the ISO, you do not have to pay exorbitant membership fees or attend meetings all over the globe in order to have a hand in the standard process.

As one member pointed out to me, IETF keeps its meetings open to all, has no membership fees and charges a bare minimum — \$130 — for a five-day conference.

Furthermore, anyone who has an Internet mailbox — or a gateway to the Internet E-mail system — is welcome to put in their 2 cents worth on a proposed new standard or enhancement.

You'd think this huge, loose-knit community would never get anything done, particularly since the governing bodies, such as the Internet Advisory Board, can only recommend courses of

Continued on page 58

Distributed computing drives support costs

Managers cite network complexity as reason

BY JOANNE M. WEXLER
OF ENR

FRAMINGHAM, Mass. — The proliferation of distributed computing environments and client/server applications is making organizations increasingly dependent on enterprise networks. Managers are now investing more heavily in internal and external network support, according to a recent study by Dataquest/Ledgeway Group, a research firm based here.

The driver behind the growing network support investments (see chart) is the confounding array of communications challenges that are springing up. These range from evaluating new networking technologies needed to create enterprise networks to tracking, managing and leveraging far-flung corporate data.

"There are too many products, vendors and technologies" for firms to juggle single-handedly, said Jon Kaplan, a director at the firm, which surveyed information services and networking managers in 500 large organizations for its annual network support revenue forecast.

Dataquest/Ledgeway calculated that the worldwide network support market reached

\$16 billion at the end of last year and predicted a near-20% compound annual growth rate for the next five years.

Kaplan estimated that one-third of these budgets could be attributed to management issues associated with distributed computing.

"Companies are fortifying their support capabilities at all levels," but in particular, they are "trying to offload the routine work so that they can focus on higher level planning and design issues, which are more strategic," he said.

Looking outside

Such is the case at Brown and Caldwell Consulting in Pleasant Hill, Calif. "We go outside heavily for maintenance and reliability services," said Jim Smith, manager of information services at the environmental consulting firm. "We try to do our own visionary planning because we're closest to the business. An outsider would have a tremendous learning curve."

Smith, who contracted early in the year with value-added reseller The Asset Group in Houston for ongoing network maintenance, estimated that his budget for outside support will indefinitely constitute at least 10% of

Call in the experts

The data management challenges of enterprise networks are driving users to heavier support investments.



Source: Dataquest/Ledgeway Group



*Projected

the cost of his installed network equipment base.

The main reasons, Smith said, are "the complexity of the networking environment today" and the nationally dispersed nature of his company, which precludes keeping up-to-date network working personnel on the corporate payroll everywhere they are needed.

The magnitude of these and other issues is also the rationale behind the many vendor alliances that have cropped up during the last couple of years, ac-

cording to Kaplan.

"Ironically, the smaller [vendor] companies that really understand technology, such as the router companies, don't have the field staffs in place" to solely provide their customers with the end-to-end support they need, Kaplan said. Conversely, vendors with the more sweeping support staffs "don't understand the technology," he added.

Users, then, must supply their own resources with vendor and other support sources to handle the job, he said.

Slow migration to ATM expected

ANALYSIS

BY JOANNE M. WEXLER
OF ENR

Even those hailing Asynchronous Transfer Mode (ATM) as the Holy Grail of networks acknowledge that large-scale migration to the technology will be hampered by users' existing investments in Ethernet, Token Rings and other local-area networks.

ATM took its initial product form earlier this month with the rollout of a local-area switch from Adaptive Corp. [CW, July 13].

Existing LANs will continue to serve many corporate networking needs far into the future, users and analysts contend, rendering initial ATM installations more prominent as a backbone technology that is more scalable than the emerging, 100M bit/sec. Fiber Distributed Data Interface LAN.

ATM is a gigabit-capable technology that will expand

proportionally as computer speeds rise, freeing network managers from continually segmenting and otherwise fiddling with networks as they become bottlenecks. ATM is under construction as industry-standard glue that will eventually eliminate the boundaries between LANs and wide-area networks.

Meanwhile, some users said

traditional shared-medium LANs can be tweaked to deliver some capabilities afforded by ATM. This includes software-based network configuration already inherent in smart wiring hubs from Beyer Corp. and Chipcom Corp. These auto-configuration capabilities allow administrators to cut and paste network nodes among workgroups with-

out having to physically rewire.

ATM technology takes these hub functions a step further by building temporary, point-to-point, secure network connections during a transfer at full network speeds — a feature expected from hub maker Ungermann-Bass, Inc. at year's end. In addition, in ATM mode, physically moved nodes automatically pop up on their virtual workgroup with no new addressing or management required.

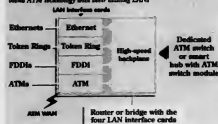
Keeping the faith

While timing-sensitive multimedia is often cited as the driver behind ATM, some users trust their existing LANs to support those applications.

"Multimedia running between a PC and local server works just fine over Token Ring," said Mark Roy, network operations consultant at John Hancock Mutual Life Insurance Co. in Boston. "It's when you run multimedia across the network — where you're aggregating traffic in bridges and routers — that you need the high bandwidth and isochronous characteristics."

Continued on page 59

Local hero
Migration to ATM network infrastructures will be complex as users blend ATM technology with their existing LANs





AS/400

IBM, AS/400, ImagePlus and PDS are registered trademarks and C-Series and Business Partner are trademarks of International Business Machines Corporation. © 1999 IBM Corp. All rights reserved. IBM and the IBM logo are trademarks of International Business Machines Corporation. All other trademarks are the property of their respective owners.

The leader in contact lenses realized its vision with AS/400s.

Perhaps you should take a closer look.

Vistakon's vision was clear. With their Acuvue[®] disposable contact lenses, this division of Johnson & Johnson Vision Products, Inc. already offered a superior product. But they also wanted to offer superior customer service. An advanced AS/400[®] application helped them do just that.

With CallPath/400, Vistakon's telephone operations are controlled by AS/400 computers, so customer data can be accessed instantly. As a result, accuracy of orders has increased. Length of calls has decreased, allowing more orders to come in. And 99% of their customer service calls are answered within 20 seconds, keeping hang-ups to a minimum and orders from going to competitors. In fact, in a recent survey Vistakon's customer service was rated number one in the contact lens industry.

Of course, you don't have to be a contact lens maker to see things so clearly. All kinds of companies are looking to advanced AS/400 applications. Companies like Porsche Cars North America Inc. are also using CallPath/400 to improve customer service. And companies like Purity Wholesale Grocers, Inc. and Omak Wood Products are using our advanced applications to fax invoices and information directly from their AS/400s, so they can serve their customers better and reduce costs.

To find out how advanced AS/400 applications can help your company keep its focus, call 1 800 IBM-6676, ext. 733.

The IBM AS/400.
Success isn't complicated.

- *CallPath/400: integrate telephone and computer capabilities.*
- *Facsimile Support/400: manage and store faxes, reduce costs.*
- *ImagePlus/400: faster document retrieval, lower storage costs.*
- *Multimedia: deliver interactive input through PS/2[®] terminals.*

The IBM logo, consisting of the letters "IBM" in a stylized, bold, sans-serif font.

TCP/IP suits them fine

The participants at last week's IETF conference had one common purpose: to ensure that TCP/IP and SNMP continue to be effective means of keeping their international, multivendor systems interoperating.

The possibility of using OSI protocols instead did not even seem to enter members' heads. TCP/IP suits them just fine.

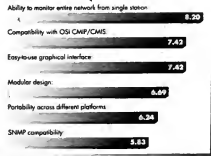
"There is no evidence of a mass migration to OSI in the Internet community," said David Crocker, principal at Sunnyvale, Calif., consulting firm The Branch Office. "People only make changes when there is a big benefit."

This tendency among users to cleave to TCP/IP, which analysts began noticing a couple of years ago, shows no signs of going away, according to a report that Business Research Group plans to release this week.

A survey of 400 corporate sites found that OSI now constitutes less than 2% of users' overall traffic and is expected to reach just under 4% in two years, the Newton, Mass. research firm said. In contrast, TCP/IP traffic made up 15%

Keep it simple

Users rate control monitoring and OSI compatibility as their top network management priorities



Average ratings on a 1-to-10 scale where 10 is a top priority; 400 sites surveyed

Source: Business Research Group, Inc.

CW Chart: Vantage Factor

of total traffic today and is expected to make up almost 23% in two years.

And despite the Government OSI Program that mandates OSI for government agencies and contractors, the 60 government sites surveyed by Business Research Group reported a very similar breakdown of TCP/IP and OSI use, said Kevin O'Neill, the firm's vice president of research.

But users placed a much

higher priority on OSI Common Management Information Protocol (CMIP) than on SNMP for future integrated network management systems, the study found.

SNMP installations currently abound, while CMIP installations — and products — are scarce, according to several recent studies. But many users still look to CMIP for the future, O'Neill said.

ELISABETH HORWITT

Horwitt

CONTINUED FROM PAGE 55

action, which the community can turn down. Indeed, the community did just that with a recent board recommendation to accept its chosen scheme for a new TCP/IP addressing scheme, without the usual months-long debate of possible alternatives.

And yet IETF members continue to bring out working, commercially successful network and network management standards on a regular basis, while "formal" standards bodies such as the ISO are still bogged down in vendor politics and debate over technical niceties.

Attending one IETF "birds of a feather" session is enough to show why.

At this particular session, four developers were presenting SNMP, a potential successor to SNMP. Advance press on SNMP, coupled with some nasty rumors that the developers would bypass the formal IETF approval process, meant that some people came to the meeting with chips on their shoulders.

However, the informal consensus of those attending the meeting was that the IETF should start working on refining and finalizing SNMP as soon as it is practical to do so.

A major reason why the presentation went so well is that the developers are many SNMP developers with a long list of credits and a lot of power in the IETF community.

In addition, the developers wisely emphasized that they would not push their proposal as a standard until the community has had a chance to go over it thoroughly and make recommendations for changes and additions. This is in accordance with the IETF philosophy of standards-making, which is to "let a thousand flowers (or proposals) bloom" and then turn them over to the Internet community and the market to determine what survives.

Putting it aside

What really makes the IETF an effective body, though, is members' willingness to bury hatchets and put aside egos and organizational politics in order to get things done.

"A lot of former SMP opponents spoke for the protocol" once they had seen the presentation, IETF board member Chuck Davin says. "People may not be 100% in love with SMP, but when the chips are down, they are very committed to ensuring interoperability" across different network management systems.

When the chips are down, these standards setters are more concerned with getting the best standards they can in a timely fashion.

Perhaps that is because the majority of them are users — not vendors or standards body officials.

Horwitt is a Computerworld senior editor, networking.

Slow migration to ATM expected

CONTINUED FROM PAGE 55

asynchronous ATM."

Isochronous capabilities — inherent today only in cell-switching technology such as ATM — guarantee that the equal-length traffic packets arrive at their destination in a steady, deterministic fashion. The characteristic is important for voice and video traffic, which would otherwise be erratic and unpredictable.

IBM supported Roy's assertion, saying it has tested videoconferencing applications over its 16M bit/sec. Token Ring network in a client/server scenario. The technology "runs fine until traffic reaches about the 90% network utilization range," said Mike Murphy, an IBM senior manager responsible for the firm's multimedia strategy.

Video Token Ring

In addition, cooperative efforts between Bytes and "the Top 2 videoconferencing vendors" — presumably Picturedisc and Compression Laboratories, Inc. — are under way to outfit installed Token Rings with video mechanisms, according to William S. Starnier, Bytes corporate

vice president of product marketing.

He said Bytes intends to bring its auto-configuration capability to the table to allow users to be cut and pasted on and off a physical Token Ring dedicated to video.

Roy said that it was "with an eye toward ATM" that Hancock invested in the Bytes LAN hub and Wellfleet Communications, Inc. routers. The Bytes hub's software configuration capabilities "allow us to manage our workstation infrastructure" in a

manner that is a forerunner to ATM, he said, and the Wellfleet router has the backbone capacity needed to aggregate the hefty volumes of internetwork traffic that will be driven by multimedia.

Hubs and routers will be ATM migration catalysts as they gain interfaces allowing ATM to coexist with other LANs (see story below).

Vendors smooth path to ATM

Internetworking vendors are moving into position to help migrate their customers' hedgepodge of installed networks to a smooth ATM infrastructure.

Retix, for example, has already introduced an ATM interface for its just-released RouterExchange 7000 multiprotocol router. Router market leaders Cisco Systems, Inc. and Wellfleet said such interfaces are imminent and have plans to also introduce full-blown ATM switches in the future (CW, June 29).

On the hub vendor side, Ugermann-Bass, Inc. has said it will deliver ATM switching within its AccessOne hub by early next year.

Chipcom Corp. said its short-term goals are to outfit its On-line Concentrator hub with an ATM interface "to add ATM LAN support and bring ATM-like function to existing Ethernet and other LANs. A natural progression to an

ATM switching world" will likely follow, said Dave Fowler, Chipcom's vice president of marketing. He indicated Chipcom will be targeting mid-1993 for an ATM backbone interface.

Hub leader Cabletron Systems, Inc. is remaining mum about specific plans, but Bill Clark, product manager of advanced technology, said, "Cabletron has a specific ATM direction," which could be an interface, switching module or full switch. He declined to comment on whether the 631M bit/sec. backbone in Cabletron's Multi Media Access Center will have enough life left in it to support ATM.

Bytes runs a 3G-bit backbone; Adaptive's backbone, which sports a card plug-in architecture that closely resembles that of the gigabit backbone in the Wellfleet router, has 1.2G bit/sec. of network capacity.

JOANIE M. WEXLER

IN BRIEF

Maintaining net uptime

■ Forest products supplier Weyerhaeuser Co. and AT&T said they signed an agreement outlining a formal process for determining whether AT&T, Weyerhaeuser's primary telecommunications carrier, is maintaining service quality expectations. Both firms will provide executive, operations and sales teams to discuss what is needed to maintain network uptime.

■ Vitalink Communications Corp. in Fremont, Calif., announced that it has signed a reseller agreement with Digital Equipment Corp. that will allow DEC to immediately start to resell Vitalink's 5000 series of TransLAN, TransRing and TransPath bridge and bridge-router products and network management products.

■ Fibronics International, Inc. has announced a 50% reduction in the price of its Fiber Distributed Data Interface bridges and routers.

**THERE ARE TWO PLACES
WHERE COMPLEX
NETWORK INTEGRATION
PROBLEMS CAN BE
WORKED OUT.**

YOUR PLACE.

As surprising as it may seem, there are many clone companies that boost profit margins by not hiring enough designers and doing dangerously little testing. What does it all mean? It means that your network is the unofficial test site for their server.



Introducing the design and testing engineers of our Systems Division at Compaq headquarters in Houston, Texas.

These are the same people who've built our reputation for developing the servers of choice in

the computer industry.

In fact, in a recent survey, the readers of *LAN Times* selected COMPAQ 386- and 486-based file servers over all others—including IBM, Northgate, Dell and AST—for the second year in a row.

Becoming this good requires rigorous network testing for months. This process—which we believe has no equal in the entire PC server industry—is referred to affectionately as "The Meat Grinder."

© 1990 Compaq Computer Corporation. All rights reserved. Printed in the USA. COMPAQ, SYSTEMPRO Registered U.S. Patent and Trademark Office. Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies. *The limited warranty service is provided by contract's Service Provider and may not be available in certain geographic locations. Consult Compaq's customer support Center for further details.

OR OURS.

Virtually every conceivable kind of test is run using literally hundreds of different applications, configurations and cards. Running on the world's

in long-standing technical alliance with Compaq—work to make sure that you get both the easiest integration and highest performance possible.



four most popular network operating systems.

But to be perfectly honest, not all development and testing takes place at our place.

Because the engineers at Novell, SCO, Microsoft and Banyan—

Unfortunately, those engineers were unable to make it to the above photo session.

Nor could the specialists who created the COMPAQ ToolKits and TechNotes—the industry's most sought-after

guides for multi-vendor network integration.

Or the thousands of technicians who provide you with a full year of free, on-site service.

Or the experts who staff our free technical support line, resolving 95% of your questions in 15 minutes or less.

For more information about everything Compaq has to offer, just call us at 1-800-345-1518, ext. 200 in the U.S.A.

In Canada, call us at 1-800-263-5868, ext. 200.

When it comes to PC server-based computing, you'll see there really is only one place to go.



The new enhanced COMPAQ SYSTEMPRO models feature the latest drive array controller, dramatically increasing I/O throughput.



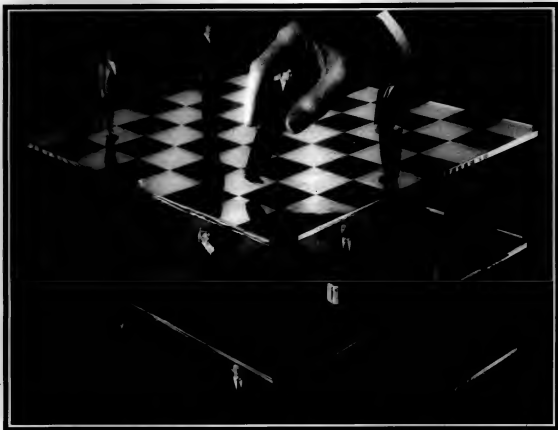
The COMPAQ Server Manager/II lets you monitor and diagnose your server remotely. In the event of a problem, it calls your help—preventing any downtime before it happens.



Our key technical alliances with major operating systems ensure optimum performance and support of your PC network.



YOU CAN'T KEEP THE COMPETITION IN CHECK UNLESS YOU ANTICIPATE ALL THEIR MOVES.



FOCUS FROM INFORMATION BUILDERS: Nothing Else Lets You Analyze And Utilize
Mission Critical Information From Any Database On Any Platform.

UNMANAGEABLE DATA WILL NEVER BE INFORMATION

If only there was a way to work with different DBMS' on different platforms, with a single set of software tools.

A way to develop applications using all your data, no matter where it is, to run transparently on any platform.

A way that avoids system bottlenecks and fully utilizes your information investment, so that mission critical never becomes mission impossible.

THERE IS A BETTER WAY

It's called FOCUS from Information Builders. The specialists in distributed information systems.

And with more than one million users in every one of the Fortune 100, FOCUS is the number one 4GL.

FOCUS is a Registered Trademark of Information Builders, Inc. 520 Broadway, New York, NY 10018

for end-user computing and application development.

DO ANYTHING WITH INFORMATION

FOCUS is powerful enough to provide decision support features like business graphics, spreadsheets and the best report writer in the business. With an unmatched ability to control and integrate critical information systems within your enterprise, FOCUS lets departmental users maintain applications that meet their requirements.

YOU WANT IT, FOCUS CAN CREATE IT

With comprehensive built-in tools you get the flexibility to develop anything from highly structured

data management applications and decision support systems, to simple ad hoc queries and reports.

With FOCUS, data becomes information, and isn't that exactly what you've always wanted?

So let your competition make the wrong moves while you make the winning one.

For more information on FOCUS and how it can fulfill all your data management needs or to attend a FREE Seminar...

Call 1-800-969-INFO

In Canada call 1-416-361-2760

IBI FOCUS
Information Builders, Inc.

LARGE SYSTEMS

HARDWARE • SOFTWARE • STRATEGIES

DG product releases reaffirm Unix direction

BY KIM S. NASH
CW STAFF

WESTBORD, Mass. — Data General Corp.'s recent introduction of a series of new products — including high-end and mid-range Unix servers — clearly reaffirms that the company's wagon is hitched to Unix.

DG/UX 5.4.2, an upgraded

Dennis Kotecki, director of information systems.

The Long Beach, Calif., medical facility, which previously had not used equipment from either vendor and is making its first foray into Unix, compared an AV 6280 top-end server with a comparably priced HP 9000 Model 887. The AV 6280 rang up 40% better performance, Kotecki said.

"We met with executives from DG and HP, and they... recognized that Unix machines are pretty much a commodity already," Kotecki said.

The RAID advantage

An advantage DG currently enjoys, however, is HADA II, a storage subsystem that uses redundant arrays of inexpensive disks (RAID) technology. HADA II was built on technology used in HADA I, a similar subsystem for the company's proprietary MV Eclipse minicomputer line. But HADA II offers more storage capacity — up to 20G bytes. Also, support for various RAID levels is available, including Levels 0, 1, 3 and 5, according to DG.

At an unveiling two weeks ago, DG executives touted the product, with a base price of \$35,000, as "unbeatable."

Robert Kidd, an analyst at Dataquest, Inc. in San Jose, Calif., disagreed. He explained that although HADA II "is a big thing for now," the advantage will be short-lived. Other vendors will no doubt produce similar wares sooner rather than later, he said.

DENNIS KOTECKI
SAINT MARY MEDICAL

operating system that supports symmetric multiprocessing and other Unix players. However, DG and its rivals are apt to hit rocky terrain as Unix boxes become less differentiated and more commodity-like, according to analysts and users.

For example, the main reason Saint Mary Medical Center opted for DG instead of Hewlett-Packard Co. was the Avion's superior price/performance, said

Fax solves imaging dilemma

Virginia Power avoids costly workstation upgrades via coupling plan

BY ELLIS BOOKER
CW STAFF

RICHMOND, Va. — Like many companies that are evaluating electronic document imaging, Virginia Electric & Power Co. faced a dilemma: how to avoid an expensive upgrade of its communications network and computer terminal infrastructure, yet still provide access to document images for casual users.

Unlike most other companies, however, Virginia Power was under a federal mandate to

make enterprise-wide access to information a reality.

Under the 1987 Occupational Safety and Health Administration Hazard Standard Notification rule, utilities such as Virginia Power have to provide safety and hazard documents — so-called Material Safety Data (MSD) sheets — to any employee who requests them.

Since 1987, Virginia Power has complied with the rule with a manual, paper-based system. But with 12,600 employees and several thousand of the 1-to-12-page sheets to administer, the paper shuffle had become a major administrative undertaking.

The push for imaging began two years ago, when the company decided to centralize the management of the safety documents, according to Susan Peterson, client services project manager at Virginia Power's information systems group.

The idea of keying the documents into a central database was rejected, according to Peterson, for fear of the errors this process would inevitably introduce.

"When these documents come to us, we consider them to be in final form, and our intent is not to change them in content or

meaning," she said.

Another nonimaging option — electronic data interchange, direct from the vendors — was ruled out because few of Virginia Power's many suppliers have that capability. "It seemed to us the lowest common denominator is paper," Peterson said.

Virginia Power picked an imaging system from ViewStar Corp. in Emeryville, Calif. But a question remained of how to provide imaging access to all employees, many of whom were connected to the utility's 3060-class mainframe.

Solution found

The answer was to couple the ViewStar system with the mainframe.

According to Bob Borowicz, a consultant at Broughton Systems, Inc. based here, the application works in the following manner:

An operator at the ViewStar workstation is simultaneously connected to the mainframe via a 3270 window. Using the Dynamic Data Exchange feature of Microsoft Corp.'s Windows — the workstation interface for ViewStar — the operator assigns each image an index number from the mainframe-based IBM DB2 database.

Later, casual users needing an MSD sheet merely log on to the mainframe, consult the index of "imaged" documents and request one. The local-area network system, alerted to this event, sends the requested document.

Continued on page 64

ON SITE



Virginia Power
Richmond, Va.

• **Challenge:** To provide access to thousands of health and safety documents to a work force of 12,600 people without incurring massive workstation costs.

• **Technology:** Electronic document imaging.

• **How it works:** Users select documents from an IBM DB2 index on the corporate mainframe, which triggers a fax gateway on the LAN-based imaging system to send the document to one of 280 waiting fax machines.

E-Mail = Emc²/TAO LAN

You've known Emc²/TAO for the mainframe for years — and now it's available for the LAN. Emc²/TAO LAN offers the same features and functions as Emc²/TAO on the mainframe — but with the sizzle of Windows on the desktop.

Emc²/TAO LAN is very well connected. It's the only LAN E-mail product offering totally seamless integration with its mainframe counterpart. That means central directory administration, centralized gateways, and scalability. In short — a comprehensive enterprise solution.



4073 Merchant Avenue, Naples, FL 33942
(813) 643-1500

Emc²/TAO

For your free copy of The
GARTNER GROUP's Research Note
on Emc²/TAO, call toll free

1-800-237-4510

OFFICE
INFORMATION
SYSTEMS

the
GARTNER
GROUP

AI seeks new programming role

Futuristic technology allows programmers to bind tool kits together

BY JEAN S. BOZMAN
CW STAFF

SAN JOSE, Calif. — Artificial intelligence, which has long been associated with robots, rules-based reasoning and expert systems, may have found a new niche as the "glue" that holds together a programmer's tool kit.

AI proponents at the recent American Association for Artificial Intelligence (AAAI) conference said many business problems cannot be solved with procedural code alone. You start with a business problem, break it apart into its components and then choose the best technology to process each component, said Bernadette Minton, a case-based reasoning expert at Alcon Corp. in Palo Alto, Calif., which recently agreed to merge with AICorp.

Pure case-based reasoning can be strengthened by generalized rules from knowledge-based management systems, Minton said. Case-based reasoning uses stored examples of previous problems and their resolutions to deduce solutions for new problems. Knowledge-based systems contain rules of "rules" from experts in a given subject area. For example, a petroleum engineer who retires from a company can store his knowledge about drilling for oil wells so that other employees can benefit from his experience when he is gone.

Future computer systems will manipulate mixed data types and will require a broader and more flexible tool set. AI can provide a series of reasoning routines that will hold the tools together. "A lot of these AI tech-

niques complement each other well," said Marc Goodman, an AI researcher at Brandeis University in Waltham, Mass.

AI programs can help users to filter and analyze large volumes of data collected by browsing on an enterprisewide network that would otherwise inundate them. A factory-floor AI application can highlight machine outages using multimedia graphics to pinpoint failure "events" passed along from a real-time monitoring system. Expert systems can handle the processing of unstructured data types such as images, multimedia and text.

Brainchild to boom

"There's a lot more to come," said AAAI President Pat Hayes, a scientist at the Beckman Institute at the University of Illinois at Urbana-Champaign. "AI is a collection of ideas about how to manipulate information."

As computing hardware becomes more powerful, it will be more practical to apply CPU-intensive AI software to everyday problems, Hayes predicted. Until now, there was a mismatch between AI processing requirements and hardware costs. "A lot of AI techniques have not even been put into commercial products," he said.

But a lot of integration work must be done to make AI tools — many of which have had limited commercial appeal — part of general-purpose programmer tool sets. Some AI firms have already moved to reposition their

Focus on function

Practical uses of AI were in the spotlight as the AAAI held its fourth Innovative Applications of Artificial Intelligence conference in San Jose, Calif.

Among the systems showcased were one that helps plan Nynex Corp.'s telephone network and one that speeds the handling of user calls to Compaq Computer Corp.'s support hot line.

Compaq's Support Management Automated Reasoning Technology (SMART) system uses case-based reasoning to help customer support technicians save time, said Timothy Acorn, manager of technical support at Compaq's Houston headquarters.

SMART, installed one year ago, is based on a Sybase, Inc. SQL Server database and a Compaq SystemPro 486 with 24M bytes of memory and 1.6G bytes of disk storage. The AI technology for SMART came from Inference Corp. in El Segundo, Calif.

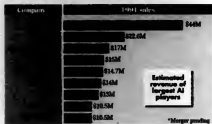
Another system, Spotlight, scans supermarket checkout data for trends in buying patterns. It uses knowledge-based reasoning to analyze gigabytes of data gathered by A. C. Nielsen Co. in Northbrook, Ill. A search that used to require two to four weeks can now be handled in less than 30 minutes with Spotlight, system designers said.

Many of the 19 systems discussed here brought significant savings to their owners. Nynex's Arachne expert system identified \$10 million in capital expenditures that could be saved in Nynex's Massachusetts region. Arachne aids designers of the telecommunications firm's network infrastructure.

JEAN S. BOZMAN

Intelligent life

The AI market is dominated by expert systems companies



Source: The Noyce Group & Trends

CW Chart: Theodore Tachet

Unix spells end of line for club's aging minis

BY ELLIS HOOKER
CW STAFF

STREAMWOOD, Ill. — Last year, Avana Clubs International added up the annual maintenance costs and license fee for the system software on its two Unix Corp. mainframes and began exploring Unix alternatives.

As a result, this 42-year-old organization, which operates Christian children's clubs in cooperation with more than 6,000 churches worldwide, will be looking for a buyer for its mid-range Unix A12 and A6 hosts next month.

The move to Sun Microsystems, Inc.'s four-processor 630 "came down to a cost issue," said Tim Rathjen, the project manager of Avana's information systems department.

Sun's line beat out several

other Unix server vendors, including Unix's own U 6000 series. In fact, Unix — which wants very much to capture



these sorts of open systems migrations among its mainframe customers — appears to have lost the Avana bid in part because of the turmoil in its mainframe business.

"Support from them hasn't

been great for the mainframe product," Rathjen said.

Rather than port its long-used financial and distribution software to Unix, Avana chose to replace it. The old software, known as the Burroughs Distribution Package (BDP), had been written under a version of Unix's Link four-generation language that is no longer supported.

"To upgrade, it looked like we'd end up doing a major rewrite anyway," Rathjen said.

Avana is replacing the BDP program with SSI Financials and Distribution from Aurora, Ill.-based Software Solutions, Inc. (SSI), which converts the 6G bytes of data from Avana's old hierarchical file structure to an ASCII format for use by the underlying Informix Corp. relational database, Jim Solomon, vice president at SSI, explained.

Avana plans to do all future application development in Informix on a Sun SPARCstation II workstation network to the

multiprocessor Sun 630.

Still, the shift to Unix hasn't meant a wholesale change in all of Avana's systems. For instance, about 30 of 75 users are still using proprietary Unixes

THE MOVE TO Sun Microsystems, Inc.'s four-processor 630 "came down to a cost issue."

TIM RATHJEN
AVANA

BTOS workstations, which have their own server and office automation platform.

"Right now we're using a terminal emulator to get the (BTOS users) through to the Sun 630," Rathjen said. Eventually, however, the organization plans to replace these and run all applications from the Sun server.

Apart from avoiding future mainframe fees and costs, Avana has witnessed some up-front savings since starting the move to Unix.

Imaging dilemma

CONTINUED FROM PAGE 63

ment to a personal computer-based fax server, which spits out the image to 1 of 260 fax machines at 60 company locations throughout the state. Users can also instruct the system to send a document to a location outside the company, such as a hospital.

"There are about 7,000 MSD sheets to scan, and two interns are doing this job at about 150 documents per day," Borwick said. In the future, he said, the scanning step may be avoided by having the suppliers fax their MSD sheets directly into the ViewStar fax server.

Although its current use of imaging is specialized and its investment of about \$200,000 is modest, Peterson said she is thinking about the changes a broader use of imaging will require in high-speed networking, storage systems and work-flow application development.

Printers built for the long run.

Complete and return this postage-paid card for more information about GENICOM's family of long-running printers, supplies and service. For faster response, call 1(800) 4-GENICOM Dept. C, or fax card to (703) 949-1392.

optional print

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone _____ Fax _____

1 I'm interested in:

- ☐ Laser printers ☐ Matrix printers
☐ Line printers ☐ All

2 What are your applications?
(please check all that apply)

- ☐ Bar codes ☐ Duplicating ☐ Large format
☐ Multipart forms ☐ Text ☐ Graphics ☐ Other

3 When will you be purchasing printers?

- ☐ 0-3 months ☐ 4-6 months ☐ 7-9 months
☐ 9+ months ☐ No current plans

4 How many printers do you plan to purchase during the next 12 months?

- ☐ 1-5 ☐ 6-10 ☐ 11-25 ☐ 26-50 ☐ 50+

5 ☐ Please check this box if you would like to have a GENICOM representative call you

GENICOM

Printers built for the long run.

One Genicom Drive ■ Midwaytown, VA 22080-9942



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO 124 WAYNESBORO, VA

POSTAGE WILL BE PAID BY ADDRESSEE

GENICOM

One Genicom Drive
Waynesboro, VA 22980-9942



NEW PRODUCTS

Database management

Data Summary, Inc. has introduced Version 3.0 of the Intelligent Data Conversion System (IDCS) for the IBM Application System/400.

The product helps users move data from IBM System/360, personal computers, mainframes, Digital Equipment Corp. VAXstations and other non-IBM systems to AS/400 applications. IDCS 3.0 includes a table translation that allows codes in the input data to be translated into the codes that the new system requires. It also includes a join-record feature that connects records from different data files to create a single output record.

IDCS 3.0 costs \$995 for AS/400 Model 9402 and \$1,800 for other manuals.

Data Summary
2535 S. Clinton
Berwyn, Ill. 60402
(708) 795-0606

Information Builders, Inc. has announced SmartMode for Focus, an intelligent query analyzer/generator designed to control Focus requests. Focus is a fourth-generation language for application development and end-user computing.

SmartMode for Focus monitors traffic and acquires knowledge about data access patterns. A knowledge base is constructed to extrapolate costs of future requests. SmartMode's Collector Training System captures statistics and reports how requests are processed against heterogeneous data sources.

Prices range from \$24,000 to \$39,600.

Information Builders
1250 Broadway
New York, N.Y. 10001
(212) 736-4433

Systems Center, Inc. has announced NDM-MVS/SQL, a software package that provides an SQL link to IBM DB2 databases.

NDM-MVS/SQL was designed to simplify data transfer for distributed, host-connected applications. According to the company, NDM-MVS/SQL provides users with a tool for transferring data, while ensuring data

integrity, availability, reliability and security. Data can be selected from a DB2 database and transferred to a flat file on a variety of operating systems, or it can be transferred to another DB2 database. Any NDM-supported operating system can transfer and insert a flat file into a DB2 database.

Prices range from \$5,500 to \$21,850.

Systems Center
1800 Alexander Bell Drive
Reston, Va. 22091
(703) 264-8000

Software application packages

Avalon Software, Inc. has a new

version of its CIIM client/server manufacturing software for Oracle Corp.'s relational database management system.

CIIM 8.5 is a line of fully integrated manufacturing, distribution and financial software applications.

Enhancements in this release include increased ease of use via support for Oracle SQL Forms 3.0, more financial functionality

and support for corporate entities. Multicurrency support, greater flexibility in the systems financial modules and more layers of user and system security have also been added.

Prices range from \$25,000 to \$750,000.

Avalon Software
3716 E. Columbia
Tucson, Ariz. 85714
(602) 790-4214

Our new laser printer doesn't make paperwork.



It makes paper work.

Introducing the GENICOM 7170. Superior paper handling solutions for network laser printing.

Our new 17 ppm laser printer lets you put four paper-feeding sources online at one time. Start with dual 250-sheet input cassettes. Then add a duplexer for two-sided printing, a 1500-sheet high-capacity feeder for long jobs and a multi-purpose feeder for envelopes, transparencies and labels. Now output to either a 1500-sheet stacker or a 10-bin mailbox sorter, and your very flexible, very affordable workgroup laser printing system is complete.



It talks the talk.

The 7170 features resident PCL 5th and IBM[®] XL24[®] emulations. And the

optional PostScript[®] language compatible interpreter provides automatic emulation sensing. Parallel, serial, AppleTalk[®], Novell[®] Ethernet and Token-Ring interfaces are available.

A clear edge in print quality.

Edge-enhancement technology and 300 dpi resolution provide super sharp print quality. A vast array of scalable and bitmapped font styles are resident.

Workgroup-rated performance.

With the 7170, your whole workgroup can print sophisticated graphics and text up to 50,000 pages per month. And like GENICOM's entire family of business printers, the 7170 is backed by our worldwide service and support network. So put your paper to work today, call us at 1-800-4-GENICOM ext. 52.

GA Schedule approved

GENICOM

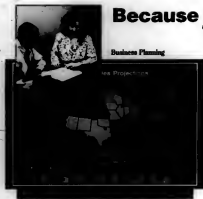
Printers built for the long run.
One Genicom Drive • Wayneville, VA 22090

SAVE MONEY RECRUITING STAFF.

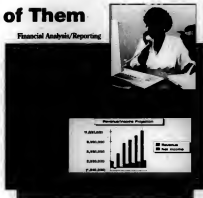
Advertise in Computerworld's regional careers pages. They work.

800-343-6474
x201

© 1991 GENICOM Corporation.
All company names, product names and trademarks
or registered trademarks of their respective owners.



**Because There Are More of Them
Than There Are
of You...**



The SAS[®] System for Information Delivery



MS



Quality Improvement



The CEO needs visual checks on all the factors critical to the success of the business. The CFO wants a "small" change in the financial reports. The marketing VP is anxiously awaiting pricing models. And they're still waiting for inventory and quality monitoring systems out on the factory floor. How can one IS manager—with so little time, so few resources, and so many budget constraints—meet the diverse needs of so many clients? The answer is the SAS System for Information Delivery.

Integrated Applications for Enterprise-Wide Productivity

Unlike stand-alone solutions—which drain your software budget and drive up training and support costs—the SAS System gives you a cohesive, enterprise-wide application strategy. One that fits the needs of the executive suite, the manufacturing floor, and everywhere in between. One that supports cooperative processing across hardware platforms. And one that responds immediately to new or shifting applications demands. Virtually any application that involves accessing, managing, analyzing, and presenting data is available within the SAS System's information delivery environment.

Call Today for a Free Video Preview of the World's Leading Information Delivery System.:

See for yourself why the SAS System is the only software you'll ever need. Give us a call at 919-677-8200 for your free video preview. Also ask for details about the free SAS System Executive Briefing...coming soon in your area.



SAS Institute Inc.
Software Sales Division
SAS Campus Drive □ Cary, NC 27513
Phone 919-677-8200 □ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc. Copyright © 1992 by SAS Institute Inc. Printed in the USA.



Data Visualization



APPLICATION DEVELOPMENT

CASE • LANGUAGES • TOOLS

COMMENTARY

Judith S. Hurwitz

Process, then programs



It is a time of soul-searching in the applications development arena. Suddenly, the world seems to have discovered that applications are far from perfect. Some pundits are even asserting that we have not made any gains at all in the last two decades.

In part, the pundits are correct. Systems built over the past 20 years are flawed. Some of these flaws are technological and some are failures of communications. Both problems can be fixed.

But before we discuss how to change, let's look at the source of business frustration with today's applications. Many observers wonder why we are not able to design applications processes in the same way that we design manufacturing processes. After all, a process is a process, right?

Ain't necessarily so. Not necessarily. In factory automation, it is relatively easy to define all of the possible activities involved in the manufacturing process. Details may change over time, but the fundamentals do not.

Not so in applications development.

When we develop systems, we are in fact trying to mimic a vast array of corporate rules and knowledge. Take the developer trying to create an insurance policy system. The system has to reflect business issues, planning and policies — none of which are easy to capture in software.

Fit in the ointment

Why is this problem? Computers are wonderful at repetitive tasks — they always have been. But when it comes to handling more subtle knowledge, they are less adept.

So, what's the solution? Should we simply declare the past 20 or 30 years of commercial systems development a failure and move on? Probably not.

Many of these earlier systems really did accomplish the tasks for which they were intended. They allowed large businesses to process millions of

Continued on page 68

IBM repository shift suits users, for now

BY JORHANA AMBROSIO
CW STAFF

IBM's decision to de-emphasize its mainframe Repository Manager/MVS in favor of a local-area network version suits some users just fine for right now. But large shops expect they will eventually need the power of a mainframe as well.

That was the response to IBM's plan to shift resources away from its mainframe repository and toward providing application development tools and a repository on the workstation and LAN. IBM has been briefing users and analysts about this scenario, which the company is expected to announce within the next two months (CW, July 20).

"We've been using a LAN repository to start capturing data, but I wonder if it will be robust enough," said Brad Ellis, principal manager of data management at McDonnell Douglas Corp. in Hazelwood, Mo. The company has been using ProKit

Workbench from McDonnell Douglas Systems Integration Co. in Maryland Heights, Mo., to implement a manufacturing resource planning application, "and we've been pushing it pretty hard," he said.

"It will be a while before we're ready for a mainframe repository, but I think eventually large users will need a combination of the two," Ellis added.

Server search

Ira Morrow, a vice president at Shearson Lehman Brothers, Inc. in New York, said that once a truly distributed database is available, users will be able to keep repository data on various machines and then do a server search to find whatever they need. Still, he agreed, "there may be some shops that need or want a centralized repository, and there should be a choice."

Shearson has been using mainframe-based data dictionaries from Manager Software Products, Inc., BrownStone So-

lutions, Inc. and Reltech Products, Inc. as "interim" solutions.

Morrow said his key criteria for a repository — regardless of hardware platform — are that tools work with it, that it allow for different developers to work on the same project at the same time and share information; and that it provide the ability to keep track of different versions of a project.

All these features were supposed to be part of IBM's mainframe-based Repository Manager, although a full-fledged product was never delivered.

"There's a crying need in the user community for the concepts of Repository Manager as presented in the original vision," said Ed Achy, an analyst at Technology Investment Strategies Corp. "It will be a while before these capabilities come out on the LAN."

Another problem with IBM's plan, he said, is that the LAN and mainframe repositories will use two different models — object-

oriented on the former and entity-relationship on the latter. "Although object-oriented tools are clearly needed and wanted, they're not necessarily substitutable for entity-relationship modeling. That's the dilemma IBM is facing," Achy said.

The uncertainty surrounding IBM's mainframe-based Repository Manager is one reason that Du Pont Co. "is sitting back and not doing anything with it," even though it has the repository in-house, said Dick Stromberg, a consultant at the Wilmington, Del., company.

"A lot of the effort has moved toward implementing applications packages to get the level of integration we're looking for," Stromberg said.

For example, Du Pont has installed a family of manufacturing and accounting applications from SAP America, Inc. in Lester, Pa., that share data. Still, he said, "I would think that large users need an enterprise-wide repository."

Corporate developers hedge on NT

BY GARRY RAY
CW STAFF

While Microsoft Corp.'s promotion of Windows NT has reached a fever pitch, corporate application development managers and other observers remain mixed about their plans to develop for the future operating system.

Microsoft, at its first Win32 Professional Developers Conference held earlier this month in San Francisco, announced that nearly 150 application development tools from nearly 100 vendors already are or soon will be available for the operating system. IBM's OS/2 2.0, which shipped in March, will be supported by nearly 140 third-party development tools at year's end, according to IBM.

However, corporate developers are still waiting for the operating system wars to shake out. A recent survey by the CW Database Division found that information systems managers expect Windows NT to be a key strategic component in many environments but that it would be implemented on only 6% of all personal computers during the

next two years.

"Tools are not that important to me," said Theresa Doyle, a vice president for computer and information systems at New York financial firm Dean Witter Reynolds.

The steady stream of support for Windows NT "means that developers are committed," she noted, though her company's equity research department does not develop many in-house applications. Still, Doyle added, "we'll look at NT as soon as it's available."

Faithful to OS/2

Despite the Windows NT buildup, other corporate IS managers remain firmly committed to IBM's OS/2 operating system, largely because of strategic plans that were in place prior to the breakup of IBM and Microsoft about two years ago. And they seem unwilling to wait for Windows NT announcements and promises to come to fruition.

Of the industry's support for Windows NT tools, Cary Serif, manager of applied technology at Columbus, Ohio-based Huntington Bank, said,

"That's nice, but we're more confident with something that exists today," Huntington Bank, he said, made a strategic com-

mitment to OS/2 applications and development tools in 1988. "I'm very uncomfortable with having to build applications based on [Microsoft's] strategy of the week."

A similar position was echoed by the vice president of end-user support at a large Northeastern bank that did not want to be identified. "We're very much an IBM-oriented DP organization, so [the availability of Windows NT development tools] hasn't really changed our position at all."

Windows NT supporters have been attracted to the operating system not so much for its broad array of development tools but for tools that address their specific concerns.

Windows NT is "absolutely critical to us," said Sherm Weinberg, manager of strategic planning and data administration at CF Industries, Inc., a farm cooperative manufacturing in Long Grove, Ill. As planner of the company's database strategy, Weinberg said he found the OS/2 Database Manager inadequate for CF Industries'.

Continued on page 68

Choose one or both

The majority of today's development tools support both Windows NT and OS/2

Development tools:
Which platforms they support

| C compilers | ✓ | ✓ |
|----------------------------------|---|---|
| Borland C++ | ✓ | ✓ |
| Microsoft C++ | ✓ | ✓ |
| Symantec Turbo C++ | ✓ | ✓ |
| Cobol compilers | ✓ | ✓ |
| Micro Focus Cobol | ✓ | ✓ |
| Programming tools | ✓ | ✓ |
| Manifold Software Group Kedit | ✓ | ✓ |
| Microquill Performance Tracer | ✓ | ✓ |
| Interurb PWS Visual Manager | ✓ | ✓ |
| Microedge Slickedit | ✓ | ✓ |
| SQL servers & tools | ✓ | ✓ |
| Gupta SQL Windows | ✓ | ✓ |
| Sybase SQL Server | ✓ | ✓ |
| XDB Systems XDB Server | ✓ | ✓ |
| Microsoft SQL Server | ✓ | ✓ |
| Oracle Server | ✓ | ✓ |
| CASE/GUI tools | ✓ | ✓ |
| Popkin Software System Architect | ✓ | ✓ |
| Andros Consulting Foundation | ✓ | ✓ |
| Caseworks Workbench | ✓ | ✓ |
| Norware Data Open Interface | ✓ | ✓ |
| XVT Software XVT | ✓ | ✓ |
| Client/server tools | ✓ | ✓ |
| Microsoft Systems Manager | ✓ | ✓ |
| Esent's Esaid WinArch | ✓ | ✓ |

Hurwitz

CONTINUED FROM PAGE 67
invoices, claims and statements. They allowed them to track customers. However, developers of these systems didn't anticipate change.

The demand for faster, more responsive systems comes at a time when users are learning more about the power and capabilities of computers. They expect new technology to be more accessible and easier to use.

Application developers have a responsibility both to provide realistic expectations and to make sure that users can gain the most benefit from today's imperfect systems. This requires highly developed communications skills and a willingness to begin slowly dismantling systems that must be changed and rapidly introducing new technologies that en-

THE REAL CHALLENGE is based on human communications and relationship building — a trait often found lacking in IS management circles.

courage experimentation.

It means that it is time for IS managers to take on two challenges. First, IS management has to begin to carry on two-way conversations with senior line management, not just middle management. Those conversations must be aimed at capturing and codifying business rules and procedures, no matter how subtle. Even better, line managers can become partners in helping IS to develop better applications that the business really needs.

Second, IS management has a responsibility to its business to ensure that these systems are designed to withstand the test of time. "Things will change" should be its slogan.

In both cases, the challenge has nothing to do with tools or technology because neither will solve the underlying problem of today's application development. Rather, the real challenge is based on human communications and relationship building — a trait often found lacking in IS management circles.

To succeed, IS management will have to take on a new attitude predicated on relationships and pointed at change.

Hurwitz is president of Hurwitz Consulting Group, a Newton, Mass., consultancy specializing in applications development trends and technology, and publisher of "Tool Watch: Enabling Open Applications Development."

Silicon Graphics adds to CASEVision family

BY KIM S. NASH
CW STAFF

MOUNTAIN VIEW, Calif. — This summer has been busy for Silicon Graphics, Inc. Two weeks after rolling out new Unix workstation, the \$550 million company introduced CASE tools last week, expanding its 1-year-old CASEVision line.

The computer-aided software engineering (CASE) products are graphical tools aimed at building applications in both commercial and technical Unix shops.

The CASEVision family supports ToolTalk, an object-orient-

ed framework from Sun Microsystems, Inc. that lets different vendors' tools talk to one another and exchange information. ToolTalk battles Hewlett-Packard and Co.'s SoftBench framework.

Spurring an image

Known primarily for hardware based on reduced instruction set computing (RISC) technology, Silicon Graphics is trying to step up its software presence, according to a spokesman. The new waves are part of an overall push to promote the company's Visual Magic Division, which was formed last year when management rolled its software groups together. Currently, "a

lot of people don't even realize we have a software division," the spokesman said.

That is true of many traditionally systems-only vendors that are elbowing into the software sector to bolster sagging revenue as hardware becomes increasingly margin-thin, according to Susan McGary, an analyst at The Yankee Group in Boston. "Let the hope for systems vendors," she said, "is really software and services."

New products under the CASEVision banner include the following:

- **CASEVision/ClearCASE**, a version control tracker developed by Atria Software, Inc. The Natick, Mass.-based company signed reseller agreements in May that let both Silicon Graphics and HP market ClearCASE. The \$3,000 product was designed to support parallel development — i.e., programmers

working in a Unix local-area network environment.

- **CASEVision/Tracker**, a bug monitor priced at \$1,600. Tracker tracks bugs in programs that developers are working on and shows where the bugs originated and how they affect other parts of the application.

- **Tracker and ClearCASE** are also available as a package for \$3,750.

- **Irish Indigo DevStation**, a RISC-based personal computer with 16M bytes of random-access memory and a 432M-byte disk drive for a base price of \$11,995. The machine, which is slated to be available in September, comes configured with libraries and tools that include a C compiler and OS/2/Modi utilities.

A service called CASEVision Consulting is also available to help users integrate CASE into their shops and train programmers, among other tasks.

Corporate developers hedge on NT

CONTINUED FROM PAGE 67

needs. "When we looked at [Microsoft's] SQL Server vs. IBM's Database Manager, SQL Server was head-over-heels better," he said. Microsoft was demonstrating a Windows NT version of SQL Server at the recent developer's conference.

Weinberg also said the array of development tools for SQL Server and for Windows NT will ultimately be more complete than for OS/2. "The tools are not complete yet, but we see the market going to Microsoft," he said.

Some observers said they expect Windows NT will initially take a large chunk of its market from Unix installations.

Peter Schleider, an investment analyst at Minneapolis financial firm Wesels, Arnold & Henderson, predicted that "of the application development group... we Unix-based today, about 75% will be going to NT in the next year."

Slow to go

According to Schleider, corporate OS/2 developers are less apt to move to Windows NT in such a short time frame. Windows NT "will initially be used [to develop] technical applications," which is the traditional focus of Unix development efforts, Schleider said.

Agreeing with that assess-

ment was Eddie Currie, president of Fort Washington, N.Y.-based ImageSoft, Inc., a seller of C++ development tools. "The interest in Windows NT doesn't speak well for Unix in general," he said.

Currie also noted a single important reason why vendors will port their tools to Windows NT: the marketing strength of Microsoft.

According to Currie, "Microsoft will continue to dictate the way things go and to have success with NT and other things they do."

ImageSoft, he said, has begun porting all of its 50 development tools to Windows NT.

NEW PRODUCTS

Computer-aided software engineering

TeleSoft has introduced the ASIS Toolkit, a technology that enables users to integrate their tools to the Ada library system.

Ada Semantic Interface Specification (ASIS) was designed to develop Ada knowledge-based, portable computer-aided software engineering (CASE) tools to boost user productivity.

Reverse-engineering tools, semantic editors, automatic test generators and configuration management systems are some applications included in the CASE software.

Prices for a single ASIS Toolkit range from \$13,500 to \$36,000, depending on the hardware configuration.

TeleSoft

5959 Cornerstone Court W.
San Diego, Calif. 92121
(619) 457-2700

Application development tools

Liant Software Corp. has released C++/Views 2.0 class library.

Users can develop portable applications for Microsoft Corp. Windows, OS/2 Presentation Manager and Unix/Modi. C++/Views 2.0 consists of a third-generation, object-oriented development framework combined with more than 100 ready-to-use classes and programmer productivity tools.

A re-engineered Notifier class provides users with control of resource-based dialogs and support for multiple document interface; a C++/Browse source-code development tool automates program tasks. C++/Views for Microsoft Windows costs \$495, \$995 for OS/2 Presentation Manager and \$1,495 for Unix/Modi.

Liant Software
959 Concord St.
Framingham, Mass. 01701
(800) 872-8700

Software Maintenance & Development Systems, Inc. has introduced the ADC/AdaScan. ADC/AdaScan is an option to Aide-De-Camp, an object-oriented software configuration management system.

The product was designed to help the Ada user find which source files belong to a specific program and also tell what major program structures these files contain and what order files should be compiled in to make an executable program. ADC/AdaScan allows users to identify the types of Ada program units a compilation order represents.

The ADC/AdaScan costs \$2,195 for all platforms.

Software Maintenance & Development Systems

Suite 300
200 Baker Ave.
Concord, Mass. 01742
(508) 369-7398

Noblenet utility eases Unix woes

BY GARRY RAY
CW STAFF

Unix shops will be relieved from the terrors of remote procedure call (RPC) coding with a new utility named by Noblenet, Inc. in Mastic, Mass. last week.

RPC is an Open Network Computing specification that enables client/server computing by allowing applications residing on one network node to access procedures that reside on other nodes.

For example, an RPC client application could call and use computationally intensive procedures residing on an RPC-enabled, high-speed supercomputer.

Noblenet's tool, EZ-RPC, is a C programming code generator that replaces and enhances the functionality of the Unix System V. Release 4 utility called RPGen, which is currently included with most versions of the operating system.

According to Noblenet officials, developers first describe the subroutines to be distributed across a network using conventional C language notation. EZ-RPC then generates the additional C language code needed to create the requisite RPC transport and distribution mechanisms.

The C language source code, which Noblenet officials said is platform-independent, can be examined and altered if necessary.

The tool kit, which is available immediately, is priced at \$10,000 per installation with three seats.



Break Down the Barriers Between People and the Information They Need

**With the SAS® System—
The World's Leading Information Delivery System.**

A lot of obstacles stand between your organization's two most important assets: *people* and the *information* they need to make better decisions. With the SAS System, you can deliver the right information to the right people at the right time. Every time. And you can break down all the barriers created by...

Diverse Data Sources

The SAS System turns your organization's "islands of information" into generalized resources available to any user or application—no matter where or how data are stored, from popular databases to remote external files.

Diverse Applications

The applications that drive your enterprise are fully integrated in the SAS System—everything from EIS and decision support to financial analysis and reporting to quality management. This comprehensive approach eliminates the need for single-shot software solutions that have made a patchwork quilt of your applications strategy.

Diverse Client Needs

The specific needs and experience level of every client—from new computer users to seasoned pros—are met through personalized interfaces. Take advantage of icon-based executive information systems, point-and-click

menus for business analysts, an object-oriented applications development environment, or a full-screen display environment just for programmers.

Diverse Computing Platforms

The SAS System maximizes the effective use of your entire computing mix—from PCs and workstations to minicomputers and mainframes. You'll have true hardware independence—without sacrificing your ability to exploit the particular advantages of specific environments. Plus the ability to implement cooperative processing by segmenting applications any way you choose.

For your free video introduction to the SAS System, give your Software Sales Account Manager a call today at 919-677-8200. Also ask for details about the free SAS System Executive Briefing—coming soon in your area.



SAS Institute Inc.
Software Sales Division
SAS Campus Drive ☐ Cary, NC 27513
Phone: 919-677-8200 ☐ Fax: 919-677-8123

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1992 by SAS Institute Inc. Printed in the USA.

EXECUTIVE REPORT

MAKING WORKGROUPS WORK

Group(ware) therapy

It takes more than unwrapping the package to create a happy workgroup. People problems loom large. Here's a realistic look at how to stay sane.



"It's not a technical challenge," Young & Rubicam's Maynard says. It's a cultural and organizational challenge.

BY ALICE LAPLANTE

Corporate hierarchies flatten overnight. Worker productivity triples. Quality skyrockets. Employees work together in peace and harmony as geographic and organizational barriers collapse.

In your dreams.

There's seemingly no end to the utopian scenarios surrounding groupware computing, the industry's current software darling. Despite the huge potential, experts and early pioneers say that making workgroups work is a tall order for any information systems department or company.

"The implications go way beyond IS," says Howard Maynard, senior vice president and director of MIS at Young & Rubicam, Inc. The advertising agency has been experimenting with Lotus Development Corp.'s Notes for almost a year in its New York, San Francisco and London offices. "It's not a technical challenge," Maynard says. "It's a cultural and organizational challenge."

Much of that challenge stems from the many-

horned nature of the beast.

"Every day we feel like we've had something new to address," says David Payne, a systems analyst who helped start a Lotus Notes pilot at The Provident Life & Accident Insurance Co. in Chattanooga, Tenn. "Who's going to provide the tool? How do we handle chargebacks? Who controls the database?" (See Payne's firsthand account, page 74.)

Though definitions differ, "workgroup computing" usually refers to everything involved when a group of people use computers to collaborate toward a common goal. Success involves many complex organizational factors that go far beyond choosing the best software to buy.

In fact, even the seemingly simple decision of which product to pick is daunting: Groupware is a broad category that covers everything from sophisticated electronic-mail packages to entire office automation suites. Group authoring, calendaring and scheduling, conferencing, information sharing, project tracking and work-flow management are also popular groupware applications.

Despite this fuzziness, businesses are buying in. After a slow start several years ago, sales of groupware are growing rapidly. According to WorkGroup Technologies, Inc. in Hampton, N.H., the worldwide groupware sales are expected to reach \$2 billion by the end of 1993, quadrupling 1989 sales.

The market is young, ill-defined and highly fragmented. No vendor holds more than an 18% share, says International Data Corp., a research firm in Framingham, Mass. Sales are dominated by Lotus, which says Notes will be installed on 400,000 personal computers by the end of this year.

More vendors are jumping in every month, however. Major announcements are expected from Borland International, Inc. and Microsoft Corp. within six months (see page 74).

Keep feet on the ground

Though the payoffs of workgroup computing sound attractive, consultants and IS managers stress that too many are plunging ahead with unrealistic expectations—and false ideas of success.

As in nearly everything, linking technology and business goals, they say, is key.

"Workgroup technologies are only successful if you understand how they will improve your business process," says George Goldsmith, president of The Human Interface Group, Inc., a Wethers-

Continued on page 72



Workgroups

KEY POINTS

► Groupware pioneers say clear business goals, a handpicked group, reviews of existing processes, good training and measurable goals are the keys to workgroup success. See page 73.

► A good demo and soup-to-nuts support are needed to launch a groupware pilot. Firsthand account begins on page 74.

► User stories: Young & Rubicam, Inc. The Provident Life & Accident Insurance Co., Chase Manhattan Bank NA, Dow Chemical Co., Metropolitan Life Insurance Co., Liberty Mutual Insurance Co.

► Industry watcher David Maritz says major software vendors such as Lotus, Borland and Microsoft are expected to continue their domination of the highly scattered market. See page 74.

► **FAST FACT:** The annual cost to install and maintain a LAN-based E-mail box: About \$310 on a 1,000-user site, according to Ferris Networks.

QUOTABLE:

"The implications go way beyond IS."

Howard Maynard
Young & Rubicam

Laplanche is a free-lance writer based in Palo Alto, Calif.

Group(ware) therapy

CONTINUED FROM PAGE 71

field, Conn.-based consulting firm specializing in practice improvement and workgroup computing.

Goldsmith and other experienced hands are quick to debunk the following popular assumptions about workgroup computing:

• **MYTH:** The more information users have access to, the better.

IS managers and consultants agree that too much emphasis is placed on sharing information and not enough on actually completing group work.

"That's perhaps the first 25% of what workgroup computing can do for you," Goldsmith says. "But I don't know of many organizations — unless it's a market research or perhaps R&D groups — that are paid for merely sharing information. Most organizations are paid for getting things done, finishing projects on time and on budget and for delighting customers who want to come back for more."

Early implementers simply throw buckets of data at users and hoped productivity would follow, notes Bruce D. Sanders, an executive consultant and consulting psychologist who is president of Workgroup Associates in Vacaville, Calif.

"In fact," he says, "the reverse was true. It became easy for the trivial to flood out the significant."

Ironically, a prime example is the Notes User Group, says Michael Mandelbaum, vice president of systems development at the North American Section of Chase Manhattan Bank NA, a workgroup pioneer that now has 1,500 Notes users. The user organization runs a Notes-based database application for 200 corporations worldwide.

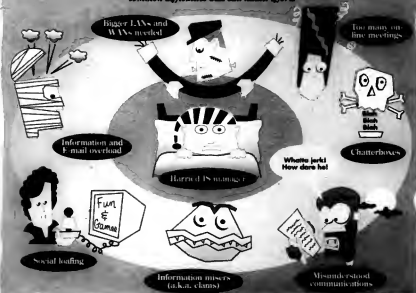
The original idea was classic groupware. The premise, Mandelbaum explains, was to give early Notes users a forum to share experiences and solutions.

But things got out of hand, Mandelbaum says. "It used to be that you would see 10 new items posted a day, and it was fairly easy to keep up with what was going on. Now there are 50 or 60 new items, and if you miss two or three days of logging on and reading the database, you become lost."

Learning from the experience, after its initial pilot, Chase appointed expert edi-

Nightmare on Group Street

To make workgroups pay off, experts say IS managers need to beware of several common difficulties that can haunt efforts



CW Chart: Michael Saggus

tors to help keep users from getting bogged down in useless data. Editors hunt out and delete insignificant, inaccurate or misleading entries.

"One thing that having a Notes administrator was critical," Mandelbaum says.

• **MYTH:** An improved or simplified group process will yield a tangible business advantage.

Another common and big mistake experts warn against is believing that an improved group process will automatically help the business — or worse, that it's a worthy end in itself.

At Metropolitan Life Insurance Co., some 150 users in the investment department use Notes. In addition, a group-scheduling application, which runs on the IBM Professional Office System (Prof) E-mail system, helps arrange meetings and conferences among team members scattered in New York, Chicago and Atlanta.

According to David Daniels, manager of executive information at the investment department, meetings or videoconferences that once took hours to arrange now take 30 seconds.

But easier isn't always better, he says. "Now people are saying it's so easy to schedule meetings that people are finding it too easy to schedule unnecessary meetings. That wasn't exactly the point of the system."

Goldsmith recounts the tale of a large multinational insurance client that was having a tough time managing a critical project.

After a series of missed deadlines, the team instituted a practice of filing biweekly progress reports. These reports were filed electronically into a database that was reviewed by management and updated every two weeks.

"Unfortunately, people were making their status reports in the form of diary entries, merely listing their activities,"

Goldsmith recalls. No attempt was made to compare entries with project goals.

"No one had any idea whether the project was on track or not," he says. His solution was to design a Notes application that required biweekly status reports to be matched to specific project goals as soon as a task was completed.

• **MYTH:** On-line meetings can replace traditional meetings.

Groupware veterans say another mistake is assuming that a new way of communicating is better simply because it's new. Instead, they say it's important to know when traditional ways are still best.

"We've found that the types of meetings that can effectively take place electronically are limited," says Neil Drake, a process specialist at Dow Chemical Co. in Midland, Mich. Dow uses several groupware packages for on-line meetings and collaboration.

The company has discovered that it's impossible to hold successful electronic meetings on certain topics, Drake says.

"We do a lot of planning and technical work, so in most of our meetings, body language is only a minor part of most of the communication that goes on," he explains. For those types of meetings, the electronic format is fine.

However, when negotiations or emotions are important — such as when discussions of corporate philosophy or departmental politics or organizational changes are taking place — electronic sessions don't work as well as traditional, face-to-face meetings, he says.

"Bored or annoyed expressions, crossed legs, sitting-back-in-the-chair motions and other body language clues become extremely important to correctly interpreting what is going on," Drake says.

TECHNICAL BACKGROUNDER

What is groupware, anyway?

Groupware — software designed to facilitate workgroup computing — is a fuzzy term that covers a broad range of products that fall into a number of different categories:

• **Information sharing products** are designed to help workgroup members trade data through sophisticated messaging and database functions. Products such as Notes from Lotus Development Corp., Topic from Verity, Inc. and Co-operation from NCR Corp. fall into this category.

• **Electronic meeting or conference applications** — such as Aspects from Group Technologies, Inc., Instant Update from On Technology, Inc. and VisionQuest from Collaborative Technology Corp. — allow two or more users to engage in simultaneous electronic communication via desktop PCs. Many "meetingware" vendors tout their products' ability to provide instant documentation, which lets attendees walk away with hard copies of everything discussed.

• **Scheduling products** — such as Network Scheduler II from Powercore and Action Plus from Action Plan Software — make it easier to arrange meetings or coordinate conferences among a group of people.

• **Networked office automation software suites** such as WordPerfect Office from WordPerfect Corp. and NewWave Office from Hewlett-Packard Co. let individuals perform a variety of applications in sync with one another.

• **E-mail packages** with layers of extra functionality, project management and task management features built in — such as Higgins from Enable Software, Inc. — are also categorized as groupware.

For this reason, many organizations experimenting with electronic means of interaction are finding that supplementary means of interaction are important.

For example, if an electronic meeting is going on in one room, participants can intercept verbal comments simply by calling them out. At Dow, electronic conferences in different locations will often also use a conference call.

(On the bright side, some conflicts that would arise in face-to-face meetings can disappear in electronic forums.)

• **MYTH: More group participation automatically improves quality and productivity.**

In fact, experts warn that groupware can actually harm productivity. Sanders points to several classic research studies of group efforts that identified a phenomenon called "social loafing."

In one study, for example, individuals playing a game of tug-of-war tended to pull less forcefully as teammates were added. "Part of that can be attributed to the difficulty of coordinating your efforts with others," Sanders says. "But another part clearly comes from individuals people feeling that their efforts will not be fully recognized."

To avoid this, Sanders advises designing systems in which everyone's responsibility is clear. "Even in the most democratic workgroup, there has to be clear accountability, responsibility and authority," he says.

On a larger scale, Sanders says he fears that companies with severe communication or management problems will see groupware computing as a way to solve problems that in reality go much deeper than a software package.

"Groupware is not a panacea for solving organizational problems such as poor communication or information overload," he warns.

• **MYTH: People are eager to give and receive new information.**

Remember that kid at school who wouldn't share his crayons? Well now he's working next to you, and he hasn't changed. Experts warn that "information misers" — individuals who won't share information even when it would benefit the organization — can be a big fly in the groupware ointment.

A sales representative, for instance, might hesitate to share leads in a common database for fear of losing a personal advantage. The problem is especially bad in corporations that encourage competitiveness among colleagues.

"There's always the issue of deciding what information people want to share and what information they want to keep private," Mandelbaum says.

Chase tries to promote good information citizenship, he says. The bank's international project finance department shares data between the U.S. and the UK about possible client contracts — a virtual impossibility in the past.

"Two groups in different geographic

and time zones now have full access to everything that is going on in either site," Mandelbaum says.

Even where the corporate climate is favorable, he says, local problems can doom groupware projects. Mandelbaum says Notes projects have failed at Chase because of interpersonal or cultural roadblocks. "We've hit places where we've got a good idea and a good project, but the culture just isn't right for it yet."

• **MYTH: Installing groupware technology is a snap.**

Even though "soft" issues are the biggest groupware concern, that doesn't mean technical concerns do not exist.

For starters, few organizations have all the necessary network infrastructure in place to make groupware work.

Functional workgroups can spread beyond the confines of a particular department or geographic site, so companies must first install enough local- and wide-area networks to handle each member.

And because most groupware packages are based on some form of messaging system, installing them on top of the existing enterprise-wide E-mail system and other communications packages can make life hellish for both IS and end users.

That was the case at Boston-based Liberty Mutual Insurance Co., project manager Scott Joy says. "One guy in our department needs to check Microsoft Mail, VM Notes, ComServe, MCI Mail," Joy says. "The list goes on and on."

Although gateways exist, the simple act of coordinating directories and user identifications is a huge chore. "People are getting bombarded with E-mail boxes," he says.

• **MYTH: IS can lead the charge alone.**

Committees worry that eager technology professionals are raising unrealistic hopes that have vexed senior business consultants, behavioral psychologists and organizational change experts for years.

Met Life's Dahlsen is concerned that IS professionals lack the needed skills to be on front lines of company change.

"There's the old saying that people went into computers in order to get away from people," Daniels jokes. "Now they are finding themselves at the very center of enabling technologies in the corporate culture. It's ironic."

It's no surprise that smarter companies are increasingly turning end users loose on groupware.

Unlike many other pioneers, Maynard says, Young & Rubicam invited business units to create applications. Today, advertising teams in New York and San Francisco devise prototype Notes applications for client accounting, personnel and more. The applications are then taken to IS to develop for worldwide use.

"The potential impact to our company is enormous," Maynard says. "Too enormous to be solely an IS responsibility." •

Here's a little help to make your group click

Experts and early groupware computing implementers offer tips on what makes groupware computing successful:

• **Define a specific business objective.** Reject vague desires such as "enhanced communication" or "more team participation" in favor of concrete goals. Examples: higher sales among cross-functional product lines, reduced costs and turnaround time for creating customer presentations or more closings on client deals, says George Goldsmith, president of The Human Interface Group, Inc.

• **Select the workgroup carefully.** Too often, workgroups are created because they already exist (an accounting department, for example), along with a technical infrastructure. Be open-minded enough to create workgroups that transcend existing boundaries or notions, experts advise. "Groups can be permanent or temporary," says Bill Blumenthal, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "It's a much more fluid concept than a lot of people realize."

• **Appoint workgroup "editors."** To help prevent its 1,500-user groupware from getting bogged down in too much data, Chase Manhattan Bank NA appointed special editors to pare down extraneous or incorrect entries. "We found that having a Notes administrator was critical," says Michael Mandelbaum, vice president of systems development.

• **Examine existing group processes.** Experts say the biggest gains in groupware computing generally come from improved, re-engineered business functions — not from speeding up existing methods. To this end, it's critical to involve end users, information systems professionals, organizational change experts and business managers at this stage.

It's also wise to look for possible trouble. "By spotting problems in current sys-

tems, you can anticipate the ones you'll encounter with groupware computing," says Bruce D. Sanders, an executive consultant at Workgroup Associates.

• **Don't forget training.** Companies also need to design and deliver a carefully thought-out program that focuses on much more than mere eye-hand coordination and which key to press. Of special importance is educating users on "electronic etiquette," such as typing (grip) before a lighthearted remark.

• **Make groupware an orientation tool.** Some corporations, such as Dow Chemical Co. and Teledyne Network Services in Princeton, N.J., use groupware packages to quickly orient new hires. "We've built a historical database of department activities over the last five years," explains Neil Drake, a process specialist at Dow. New employees can access a database to read productivity reports, job status entries and programs. Supporters say the tactic helps bring new workers up to speed quickly without diverting other employees from their jobs.

• **Know when to go off-line.** Wally Baker, assistant vice president of corporate planning at Metropolitan Life Insurance Co., says it's important to know when to switch from electronic discussion to in-person talks. "If you're not careful, you can bite off more than you can chew," he says. "We've learned how much time to devote to input and how much time to devote to discussing the output."

• **Establish success measures** — and check often. Quantitative benchmarks for measuring groupware success are key. This means establishing a baseline standard and having a clear "before" snapshot prior to groupware formation. During the project, measure often. Ask users and others involved to submit qualitative evaluations of the application's success.

ALICE LAPLANTE



Select workgroup "editors" to keep information roads manageable, Chase Manhattan's Mandelbaum advises

Two views: Groupware in the firm and marketplace

FIRST PERSON

An IS missionary discovers that potential users need show AND tell

BY DAVID PAYNE

Though I'd read about Lotus' Notes over the past couple of years, I didn't fully understand what it was or the significance of groupware until I saw a demonstration at Comdex/Fall '91.

Soon after, we made plans to explore the product. In December 1991, we did our initial installation, which consisted of one Notes server, an IBM Personal System/2 Model 95 and three end users on our team.

My group, part of the information resources department, has built the corporate LAN environment at The Provident Life & Accident Insurance Co. in Chattanooga, Tenn. I joined in January 1989.

From the beginning, our focus has been on the workgroup. We've sought to push beyond "personal productivity tools" and the use of LANs for simple file and printer sharing that characterized the 1980s. To that end, we handle cabling, hardware and software requirements and LAN administration issues to support workgroups. The environment includes everything from a word-processing charter for a department, an actuarial or underwriting unit, the entire department or a team of managers from different departments.

We have numerous departmental LANs attached to a Token Ring back-

bone, with more than 800 OS/2-based IBM PS/2 workstations — and the number is still growing.

So with all this preparation, why did installing groupware come as such a surprise? And how did I end up with so much work ahead of me?

Simple idea, tough sell

Right away, we knew that Notes was very different from any personal computer program we had ever seen. "This is the product that will take us that next step — nay, leap — forward toward workgroup productivity," we said. "Let's start telling everyone the good news."

Easier said than done. When we asked, "Have you heard of Lotus' Notes?" people in our own department unanimously replied, "Yes, I've read about it. It's an E-mail package, right?"

This broad misconception became our first challenge: How do you best convey the concept and uses of Notes (or groupware in general) as a new genre?

At first, we used a typical introductory chart presentation. But we soon discovered that this took too long to get to the point.

Then a realization hit us: Showing any one of many examples of Notes' numerous applications would be more effective. So we began making presentations to in-

dividuals or small groups with a demonstration on a laptop loaded with Notes.

Once people understood the basic concept behind groupware, it was time to continue training.

Our first Notes-specific education was to sponsor an in-house introductory application development course taught by Lotus. Prior to this, the participants' only exposure to Notes (if any) had been a 15-min. overview and demonstration. Even so, each one quickly grasped the concepts and the development process.

After the class ended, however, enthusiasm waned. We had expected a clamor for immediate installation and access to this wonderful new tool, but there was none. What happened?

THIS IS THE product that will take us that next step — nay, leap — forward toward workgroup productivity," we said. "Let's start telling everyone the good news."

Simply put, our Notes production environment wasn't ready. The reason was that much of what is typically thought of as the LAN environment is hidden from the groupware user.

For example, Notes has no disk drive letters to worry about, no cryptic file names to interpret. For system administrators, it's easy to get caught up in its simplicity.

Nonetheless, the same business-criti-

cal LAN management issues are behind why user issues, including user and group ID administration, system availability, data backup and data security.

And the applications still require some development. While Notes is easy to install on the server, we must still address maintenance issues.

Above all, end users and application developers still need training. Though Lotus makes it easy to "load and go," a successful implementation for us means a production-level environment that can be used as a base for any application.

Where to go from here?

It's difficult to maintain continued interest in a system that's "just there," especially without available educational resources. So we remain a small installation (40 or so users) as we build our production system and add applications.

We're currently working with an in-house team on setting up more education. Training is one of the more difficult pieces to coordinate because people are so busy.

We are still excited about groupware tools that will produce productive change to our work flow. With its application development environment, E-mail and expansion options such as the fax gateway and connectivity to other E-mail systems, Notes is a natural fit.

Because of this wonderful new tool, my work has increased enormously. The tremendous payback, however, is worth it. Besides, I can use this tool myself. It's the first product since Lotus 1-2-3 that's really made that big jump for me.

Payne is a systems analyst at The Provident Life & Accident Insurance Co.

INSIDE EDGE

Industry watcher says he expects big vendors to dominate the scene

BY DAVID S. MARSHAK

Software vendors of every shape and size are seizing groupware as a new way to hook users. Yet successful groupware applications of the '90s will not come out of someone's garage.

High development and delivery costs mean that only major groupware players such as Lotus Development Corp., Microsoft Corp. and Borland International, Inc. are likely to dominate for the foreseeable future.

The following is a fast rundown on the strategies and directions of the major vendors:

LOTUS

Lotus has taken a huge lead in market share and mind share. In fact, Lotus Notes has become almost synonymous with "groupware."

Announced in December 1989, Notes boasts an estimated 400,000 users. Another 2 million Lotus CC-Mail users represent a ready market.

Lotus intends to use Notes to anchor a whole new set of workgroup offerings known as "Noteware." These will include work flow, imaging and document man-

agement as well as information and software distribution applications.

Hundreds of other companies are also remodeling Notes or adding value to Notes applications, including Sandpoint Corp. in Cambridge, Mass., and Quality Decision Management, Inc. in North Andover, Mass.

MICROSOFT

Microsoft is building a framework for workgroup applications. Windows Open Services Architecture will give any Windows application access to services such as electronic mail and directories.

A Messaging Application Program-

ming Interface (MAPI) will also be offered for the Macintosh, DOS and OS/2. MAPI is being pitched as a cross-platform interface to messaging services.

Microsoft will build its own workgroup applications on MAPI and is encouraging other developers to follow suit.

BORLAND

Borland has been coy about its groupware intentions. Despite a February announcement of directions, its plans remain a vague, moving target.

In contrast to Lotus' Notes, Borland is taking a "client-centric" approach. The plan is to provide communications and workgroup support as an extension to current desktop personal productivity tools.

Borland is well-positioned to use its database technology, particularly InterBase, to build a transaction-based groupware environment. The Borland Object Component Architecture, if successful,

should enable existing applications from any vendor to work with this environment.

The suspense may soon be over, however. Next week, Borland is expected to announce new products at the Groupware '92 show. Shipments might not begin until next year, though.

Other big guns

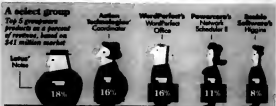
Digital Equipment Corp. and Hewlett-Packard Co. will focus on work flow, while Filkenor Corp. in Costa Mesa, Calif., and Pegasus Software, Inc. in Sunnyvale, Calif., will concentrate on imaging. Small companies to keep an eye on include Keyfile Corp. in Nashua, N.H., and Reach Software Corp. in Sunnyvale.

IBM's strategy is less clear. It is supporting Lotus' Notes and has an agreement with Action Technologies, Inc. in Alameda, Calif. Still unclear is whether IBM will support Lotus' implementation of Action's product or offer its own work-flow product.

The other area to watch is the E-mail application programming interface (API) wars. Microsoft, Lotus, Apple and others are vying to create the accepted platform for building workgroup applications.

Until a single mail-enabling API is available, developers will be forced to choose camps. The outcome of these battles will go a long way in determining the future of the groupware landscape.

Marshak is a vice president and senior consultant at Patricia Seybold Group in Boston.



Source: International Data Corp.

CW Chart: Michael Rogers

Put to the test

Usability labs can help you see if an application is going to fly with users or if you've created a dud — before you sink wads of money into development

BY ALICE LAPLANTE

In the early 1980s, IDS Financial Services, Inc. rolled out a new mainframe-based CICS application it had developed in-house. The program was designed to help the company's customer service representatives more efficiently serve clients who called to update their files or request portfolio information.

The problem was, the application stunk.

Oh, the code worked. All its bugs and glitches had been ironed out through standard procedures, and there were no system crashes or significant performance problems. But the system — developed at a cost of tens of millions of dollars, according to Alan Bignall, vice president of financial planning — was virtually unusable. For instance, users who merely wanted to change or verify a customer address, which was a common phone request from IDS customers, were required, among other things, to go through a convoluted series of steps. These steps took users an average of 10 minutes — and sometimes as long as 45 minutes — to complete.

"This was a major engineering project for IDS, and it affected hundreds, if not a thousand or more, employees every day," Bignall says.

The reason the system failed miserably was plain: Absolutely no attempt was made to discover whether the software worked the way IDS employees did.

Unfortunately, this is not an atypical scenario for most corporate information systems departments. But some leading-edge IS shops are raising against unusable software and are setting up, funding and managing what are known as usability laboratories. These labs can not only help user productivity but also save money by ensuring that software comes out right the first time and by minimizing the use of support resources.

The idea for usability labs made its way into Fortune-class IS groups from the personal computer software vendor community, which uses these facilities to ensure that commercial products are easy to set up, learn and use. In a nutshell, such a lab conducts usability tests in

which typical users are observed performing typical tasks using a given hardware or software product. Any difficulties the users have learning or using the product are measured, noted and sent back to developers for correction.

Usability testing is a separate process from merely testing for bugs; test subjects aren't trying to crash the system. In fact, the

place in 1989 is ensuring that the company will never again repeat its "nightmare system" fiasco, says Kay Chabouk, manager of the usability lab at IDS, a Minneapolis-based subsidiary of American Express Co.

Spend n' save

Despite the expenses involved in building such facilities — costs can range from \$60,000 to \$200,000 for the more sophisticated labs — the savings resulting from usability testing can be substantial. Studies have indicated that each dollar spent early in usability design can save \$100 later, says James M. Evans, an IS analyst at Prudential Services Co. who just completed building a usability lab for Prudential Insurance Co. in Roseland, N.J.

Savings on the development side include those stemming from "doing something right the first time," says Jeff Schneider, president of Usability Sciences Corp., an Irving, Texas-based consulting firm. Schneider says an average usability test run in his firm's lab will result in 70 to 100 recommendations of how the software can be improved from a usability standpoint. His firm tests software usability in six areas: installation, training, documentation, on-line Help, interface design and error recovery.

The payback for catching errors can be significant, Schneider says. For companies that don't do usability testing, "there are the additional training and support costs that a poorly designed system will incur. Users will take longer to learn the software and make more phone calls to the help desk after training is complete," he says. Furthermore, there is the lost productivity when users spend valuable time struggling to use the system to perform their day-to-day tasks.

Then there is the ultimate system nightmare: having to go back to the drawing board because an application has been completely rejected as unusable.

Studies are currently under way to quantify the savings involved in usability testing. American Airlines, which opened its 3,000-sq-ft usability lab in 1989, has found that "catching a usability problem early in the design process can reduce the cost of fixing it by 60% to 90%, according to

Continued on page 76



Tim Lee

assumption is that the application works from a technical point of view. Rather, usability tests are conducted to see whether the system makes sense from the user's perspective.

That perspective has been brought in at IDS, where a \$130,000 usability lab put in

F.Y.I.

American Airlines' Janice James says that Bob Crandall, CEO of the airline, came to visit the company's usability lab and was so impressed, he suggested that James start a user group. She founded the Usability Lab User Group in 1991. Today it has 250 members.

Here are the pertinent facts:

- First official conference in August at WordPerfect Corp. in Provo, Utah.
- Quarterly newsletters.
- Directory that permits members to contact one another directly.
- For more information, contact James at (817) 963-2785.

Lapante is a free-lance writer based in Palo Alto, Calif.

Continued from page 75

Janice James, manager of American Airlines' usability lab in Dallas.

The most basic usability lab setup involves two rooms connected by a one-way mirror. The testing room contains the computer equipment on which the target applications will run, a video camera that will capture the subject's reactions to the system and some sort of two-way audio system so that lab staffers in the observation room can communicate with subjects in the test room. Observers may include lab directors with human factor or psychology backgrounds working with cross-functional teams including developers, programmers/analysts, users, support personnel and business managers.

Most labs have two or even three video cameras so that a user can be videotaped from a number of different angles. Summary videotapes can be created using video-editing facilities to combine highlights of various tests.

Logging software that records key-strokes and measures lulls in keyboard activity is helpful although not absolutely necessary. American Airlines opened its lab using just a notepad and a stopwatch.

The kinds of problems usability testing uncovers can include cumbersome or counterintuitive ways to perform basic functions, such as the lengthy series of screens and menus IDS software had for users to change a customer's address.

Another common problem is obscure and jargon-y words or phrases used to describe a menu selection. Documentation can be unintelligible or poorly indexed,

and keystrokes for basic functions can be inconsistent from one part of the application to another. For example, pressing F1 might bring up on-line help in one module of an application but close a session in another—a usability no-no. On a more superficial level, the colors on the screen could be distasteful or jarring.

"Several years ago, people were overjoyed simply if a system worked," says Jackie Schrier, a senior research scientist at the Bedford, Mass.-based American Institutes for Research, which performs usability consulting. "Now, IS departments are working at a higher level and want to ensure they are maximizing user effectiveness."

Test early and often

While usability labs minimize the chances of unfriendly software, experts caution against the notion that a usability lab is where finished software is sent just prior to release. They also warn against equating a high-tech facility with results.

"The lab is just a tool; what's more important is the process through which the tool is used," says Dave Rinehart, a partner at consulting firm Usability Systems, Inc. in Atlanta. "People think that building a sophisticated room that contains the appropriate video and sound equipment means they have a usability lab. But if they don't have a sound methodology, it won't do any good."

For example, improperly designed tests could mean that an IS organization is simply validating what it already believes about user interfaces instead of investi-

Dissecting the lab

Usability labs can cost from \$60,000 to \$200,000. Here's what a basic one contains:



gating what is really happening in the user community, Rinehart says.

"Usability testing should begin as early as possible in the development process," American Airlines' James says. That way, developers can fix problems as they happen rather than having to redesign the entire application.

Tom D'Onofrio, a senior staff programming analyst at IDS, first used the company's laboratory while designing a new set of integrated, PC-based financial planning tools. Although some preliminary prototypes of the system had been built by the programming team, the usability tests took place fairly early in the

design process, he says.

"As a result of what we learned, we went back and did a series of restructuring designs to the system," says D'Onofrio, who feels that "balanced" use of the lab—falling somewhere between a free-for-all brainstorming session and simply asking users for feedback on specific screens—was the most helpful approach.

James says she tries to bring new software products into her American Airlines lab at least four times during a development cycle:

- In the design phase, after a user's needs analysis has been done but before coding has commenced.
- After the application has been prototyped.
- During alpha testing.
- When it's time for a beta release.

"Early design walk-throughs allow users to look at screen designs in order to check the work-flow logic and make sure that menu terminology makes sense," James says. "You can get quite a bit of valuable feedback before any actual coding has begun."

Prodential Services' Evans agrees. "Bringing an application into the lab at the end of the development cycle is usually too late," he says. He adds that although testing at the end of the cycle is better than not testing at all, usability experts should be involved from the moment a new application idea is conceived.

According to Evans, a great deal of up-front work must be done before an application is brought into the lab. Even before programmers get involved, analysts should sit down with end users and break down the things users do to get, filing an insurance claim into a series of tasks.

They should then design successive screens that take into account issues such as the order of the tasks, color combinations and the objects or choices that will be displayed to the user at any given time.

"Once you have a fairly robust prototype that shows how screens will appear and in what sequence, you are ready to bring users into the lab for the first time," Evans says. At this point, actual coding of behind-the-scenes processing or functionality hasn't yet begun, analysts are still determining key work-flow issues. Only after those issues are determined does programming of application functionality begin.

Simulating the real world

Usability experts say the tests run in a lab should mirror the real working world. For example, if a new insurance claims processing system is being tested, users

Continued on page 80

Every move you make, they'll be watching you

What do usability experts watch for when conducting a test? Everything.

They note all the following evidence during the two to three hours users spend in the lab: verbal comments, facial expressions, the time it takes to complete a specific task, the errors made and the number of times the user has to refer to documentation.

Don Ballman, manager of the usability lab at Mead Data Central, looks for the number and frequency of errors and for excessive "dwell time"—when users are uncertain how to proceed. But a certain number of errors and a certain amount of hesitation is normal, experts say.

"It's important to look for changes to errors made over time," explains Ballman, who says you have to assume users will make some mistakes on an unfamiliar system. "But if they keep making mistakes... you've got a problem."

Verbalization is instructive, as is after-the-fact analysis. Ballman will often divide a test into two parts: The user will spend the first hour at the keyboard going through the tests; during the second hour, the subject will review the videotape of his process.

"Things might click in retrospect, or a subject will understand why he or she didn't get something the first time around," Ballman says. These after-the-fact qualitative comments are extremely valuable, not only for figuring out what is wrong with the system but also for realizing what is right and getting ideas for fixing the problems.

"We look for things such as the number of times a particular error occurred and how many users had that problem," American Airlines' James says. A telephone hookup to a simulated "help desk," actually someone in the observation room who understands the product being tested, can also be useful. This support interaction can give an indication of how often the person will be forced to ask for help when using the system and can point out trouble areas.

Usability Systems' Rinehart says it can also be instructive to take away documentation and let users struggle through a piece of software on their own. "By letting users struggle and

seeing if they can figure it out on their own, we can sometimes decide whether we need an additional prompt or a special section in the documentation," Rinehart says.

Choosing Joe Typical User

Experts caution that selecting users to bring into the lab to perform the tests is an important consideration.

"The common way in the past was to say, 'Let's have Joe use the system—he's been working on it for five years and knows it inside and out,'" Prodential Services' Evans says. "But that inside knowledge is precisely why Joe shouldn't be a test subject: He isn't the average user."

It is critical to figure out who the typical user will be and to get an adequate sampling, Evans says. For example, the actual user population might be a combination of computer novices and experienced users.

Evans recommends a bare minimum of four test cases: the best results come from having 10 to 15 users. "After 10 people, you tend to get diminishing returns," he says. "You'll still catch problems, but 95% of your usability issues will have been flagged already."

Ballman says there are two important considerations to take into account before bringing a user into the lab: the user's existing business knowledge and computer skills and the environment in which the software will be used.

This second point is key because while difficult to do in a lab, simulating the workplace is essential, Ballman says.

"The phone goes off, the secretary comes in, a meeting is called, and work gets interrupted all the time in the real world," Ballman says. "A significant part of usability is how well a piece of software can be used in this type of environmental. For example, if you've been interrupted, how easy is it to figure out where you were and what you were doing?"

Evans says it's important to put participants at ease before testing begins. "You need to emphasize that you are testing the software, not them," he says. "They need to know you are consulting with them because they are the experts and you value their opinion."



I WANT THE MAX.
Tell me how **AT&T SYSTIMAX SCS**
can provide maximum integration
for my information networks.

Mail this card or call 1 800 344-0223, ext. 2045.

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone _____



AT&T
Network Systems

CW072792

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1000 PHOENIX, AZ

POSTAGE WILL BE PAID BY ADDRESSEE

AT&T Network Systems
Nat'l. Telemarketing Center
P.O. Box 13369
Phoenix, AZ 85002-9919



SYSTIMAX-imum

*Or, How Building With
AT&T SYSTIMAX SCS Builds Up
Integration Of Information Networks.*

AT&T SYSTIMAX® Structured Cabling Systems provide maximum integration to satisfy your networking needs. Floor-to-floor or building-to-building. Allowing access to voice, data and video anywhere, anytime. Linking diverse factory processes and equipment. And creating intelligent buildings by enabling information sharing among systems like energy management and security. SYSTIMAX SCS' open architectures will support today's multi-vendor systems and future technologies and applications. To learn more about SYSTIMAX SCS and our association with Honeywell, call AT&T Network Cable Systems at 1 800 344-0223, ext. 2045.



AT&T
Network Systems





intel.®
OVERDRIVE™

Introducing Intel OverDrive™ Processors.

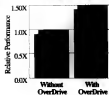
With built-in upgradability
we promised you room for the
future. Room for more power.

Well, the future has arrived.
Presenting a revolutionary new

category of single-
chip upgrades: Intel
OverDrive Processors.
The easiest, most cost-
effective way to add
even more power to
your system—for
Intel486™ SX PCs

Your upgrade

i486™ SX-20 System
Performance: Microsoft
Word for Windows*



now, and soon for
all 486 systems and
beyond.

Just pop in a new
OverDrive Processor
and you'll improve
overall i486 SX system
performance by up



to 70 percent. Added performance that will benefit over 50,000 compatible software applications.

**WE MAKE
COMPUTERS
WORK
HARDER.**

In fact, by adding an Intel OverDrive Processor, your 486PC will even run multiple Windows applications faster.

Or for a detailed brochure, call 1-800-538-3373, ext. 97. And hurry. The vacancies are filling fast.

Continued from page 76

should attempt to go through every stage of filing a claim, just as they would if they were sitting at their desks. In certain cases, they are asked to bring along actual claims paperwork from their desks.

Often, usability staff members will be aware in advance that certain aspects of the application are questionable; they will then design tests specifically to confirm or deny their suspicions.

"For example, in one application, we suspected that the phrasing used in the menus was too jargon," James says.

The phrase "Flight Monitor" was the title assigned to one pull-down menu that allowed users to check whether a given flight was on schedule. "When our users stumbled over that particular phrase, we

knew our suspicions were correct," she says. The phrase was subsequently changed to "Arrival and Departure Times."

At Mead Data Central, the maker of Nexis and Lexis on-line database products, setting quantifiable usability goals is just as important as making sure the simulation is based on the way users really work. For each product tested, developers, users, support personnel and anyone else involved in a particular project are asked to contribute to a "usability certification," such as reducing training time by 50% or reducing help desk calls by 30%, says Don Ballman, manager of the usability lab at Mead Data.

"This way, we have specific objectives in mind throughout the development pro-

cess," Ballman says.

Mead Data's lab has been in operation since 1989 and tests all internally developed software.

Ballman says more organizations are including usability experts in the development process because they finally perceive that understanding what the user wants is more essential than bolting on additional bells and whistles at the end of the cycle. James estimates that there are currently about 300 labs in operation.

"People are realizing that usability is much more than just a pretty face," Ballman says. "In the past, it was assumed that because people can learn, it's easier for them to adapt to a system than for the system to adapt to them. At the usability lab, we have the opposite premise."

Developer angst

One of the most critical aspects to the success of a usability lab is that IS developers "buy into" the process. After all, it doesn't do any good to discover problems in a piece of software if the programmers refuse to acknowledge the validity of the findings.

"There is a natural resistance to someone not familiar with the process," says American Airlines' James, who adds that most developers are usually under a tight deadline and can resist any interference with getting a product out the door. Once they are brought into the lab and can observe users struggling, she says, that resistance usually melts.

"As a generative device for getting ideas from users, it works well," IDS analyst Tom D'Onofrio says.

The IDS usability lab recently ran a series of usability tests on prototype pen-based systems, which are expected to enhance the productivity of IDS representatives, who are often at customer offices, homes or even outdoors when they take down critical data.

IDS brought in IBM — its chosen pen-based vendor — and internal developers to see how users reacted to screen color, readability and other issues involved in pen input.

"Once vendors and developers see actual users struggling, they become true believers," IDS' Chalupnik says.

"We encourage the developers to come in and observe the tests as much as possible," says Prudential Services' Evans, who notes that the Prudential lab was soundproofed for this very reason. "Developers are possessive of their efforts and tend to get a little verbal if they see someone having a problem."

D'Onofrio agrees. "You really want to jump in and explain," he says.

But because the success of a usability lab depends on its providing developers with an objective and balanced "reality check," independence is critical.

If the lab is too closely aligned with IS, there can be subtle but disastrous biases built into the testing process, especially when the systems staff is under pressure to deliver product on time and on budget.

Having a lab that strikes a balance between the user community and IS is therefore essential, Chalupnik says, adding that the most constantly remind developers reviewing the results of a particular usability test where their responsibilities lie.

"My job, in effect, is to keep asking, 'Well, what did your user say?' when a developer balks at a conclusion," Chalupnik says. "If necessary, I'll replay the videotape until they get the point."

They calculated that a 100% increase in business needed a 900% increase in productivity.



What we put together.

Lynn L. Wells
Document Management Representative

When a major health insurer suddenly doubled its customer base, their MIS department quickly predicted disaster. The company's in-house document publishing system was already overloaded. They had to drastically cut the time it took to produce vital documents or risk the company's reputation for customer service. That's when they called Lynn Wells and the Xerox team.

Working together, they saw that merely upgrading equipment to add capacity was not the solution. So they took a fresh approach and completely redesigned the company's document publishing processes. Carefully building on existing systems, they integrated Xerox workstations, software, scanners and laser printers to create a custom publishing network.

Benefit booklets that once took forty-five days to publish now take less than five, a 900% increase in productivity. MICR-encoded checks and claims explanations are being printed and mailed together, saving \$350,000 a year in postage. And forms are now created electronically, on demand, reducing costs by 30%.

If saving time, money and customers is your idea of a productive partnership, let us help you put it together. Call 1-800-TEAM-XEROX, ext. 147G.

Xerox
The Document Company



© 1992 XEROX CORPORATION. XEROX, The Document Company and Document Management are trademarks of XEROX CORPORATION. 345C 500



"YOU KNOW, WHEN I ASKED TO BORROW YOUR COMPUTERWORLD I SORT OF HOPED TO GET THE WHOLE THING AT ONCE."

YES, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$38.95* per year — a savings of \$9.00 off the basic subscription price.

First Name ☐ M ☐ Last Name

Title ☐ Company

Address

City ☐ State ☐ Zip

Address shown ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate \$40 per year

*U.S. Only. Canada \$24.97. Central/South America \$30. Europe \$195. All other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD



"YOU KNOW, WHEN I ASKED TO BORROW YOUR COMPUTERWORLD I SORT OF HOPED TO GET THE WHOLE THING AT ONCE."

YES, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$38.95* per year — a savings of \$9.00 off the basic subscription price.

First Name ☐ M ☐ Last Name

Title ☐ Company

Address

City ☐ State ☐ Zip

Address shown ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate \$40 per year

*U.S. Only. Canada \$24.97. Central/South America \$30. Europe \$195. All other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS INDUSTRY (Circle one)
- 10 Manufacturer (other than computer)
 - 11 Financial/Insurance/Real Estate
 - 12 Medical and Education
 - 13 Wholesale/Retail Trade
 - 14 Business Service (except DP)
 - 15 Government - State/Federal/Local
 - 16 Communication Systems/Public Utilities
 - 17 Other
2. TITLE/FUNCTION (Circle one)
- 20 President/Chief Executive Officer
 - 21 Chief Information Officer/Vice President
 - 22 Asst. VP/ASST/OP Management
 - 23 Dir. Mktg. Mktg. Services Information Center
 - 24 Dir. Mktg. Tech. Planning, Adv. Svcs. Dir.
 - 25 Dir. Mktg. Sys. Development/Anal.
 - 26 Programming Management, Software
 - 27 Engineering, Research, R&D, Tech. Mktg.
 - 28 Sys. Integration/Info/Consulting Mgt.

3. CORPORATE MANAGEMENT
- 30 President, Owner/Partner, General Mgt.
 - 31 Vice President, Asst. VP
 - 32 Treasurer, Controller, Financial Officer
4. DEPARTMENTAL MANAGEMENT
- 40 Sales & Mktg. Management
 - 41 Medical, Legal, Accounting Mgt.
5. OTHER PROFESSIONAL MANAGEMENT
- 50 Educator, Journalist, Librarian, Student
 - 51 Other (Please Specify)

6. INVOLVEMENT (Circle all that apply)
- 60 Please indicate your involvement in:
 - 61 Management/Supervision (M/S) of Staff
 - 62 Requirement/Specify (R/S) Equipment
 - 63 Purchase (P) of Equipment
 - 64 Evaluation (E) of Equipment
 - 65 No involvement

E4235-X

1. BUSINESS INDUSTRY (Circle one)
- 10 Manufacturer (other than computer)
 - 11 Financial/Insurance/Real Estate
 - 12 Medical and Education
 - 13 Wholesale/Retail Trade
 - 14 Business Service (except DP)
 - 15 Government - State/Federal/Local
 - 16 Communication Systems/Public Utilities
 - 17 Other
2. TITLE/FUNCTION (Circle one)
- 20 President/Chief Executive Officer
 - 21 Chief Information Officer/Vice President
 - 22 Asst. VP/ASST/OP Management
 - 23 Dir. Mktg. Mktg. Services Information Center
 - 24 Dir. Mktg. Tech. Planning, Adv. Svcs. Dir.
 - 25 Dir. Mktg. Sys. Development/Anal.
 - 26 Programming Management, Software
 - 27 Engineering, Research, R&D, Tech. Mktg.
 - 28 Sys. Integration/Info/Consulting Mgt.

3. CORPORATE MANAGEMENT
- 30 President, Owner/Partner, General Mgt.
 - 31 Vice President, Asst. VP
 - 32 Treasurer, Controller, Financial Officer
4. DEPARTMENTAL MANAGEMENT
- 40 Sales & Mktg. Management
 - 41 Medical, Legal, Accounting Mgt.
5. OTHER PROFESSIONAL MANAGEMENT
- 50 Educator, Journalist, Librarian, Student
 - 51 Other (Please Specify)

6. INVOLVEMENT (Circle all that apply)
- 60 Please indicate your involvement in:
 - 61 Management/Supervision (M/S) of Staff
 - 62 Requirement/Specify (R/S) Equipment
 - 63 Purchase (P) of Equipment
 - 64 Evaluation (E) of Equipment
 - 65 No involvement

E4235-X



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



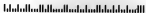
BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



MANAGER'S JOURNAL

IN BRIEF

Having it both ways

It's a data center. It's a trading floor. It's a data center and a trading floor — and the first of its kind, according to executives at the Boston Stock Exchange. The planned return move of the exchange's downtown Boston data and communications center to a new suburban facility is aimed at garnering greater space at a lesser cost, one executive said — and more: The 10,000 sq-ft space is being designed to serve as an emergency backup trading floor.

Ernest Waller was recently ennobled at Florida-Bank as the Jacksonville, Fla.-based federal savings bank's assistant vice president and manager of information systems. Before taking this position, Waller served as assistant vice president of telecommunications at Florida National Bank, also based in Jacksonville.

This Thursday is the scheduled opening day for Metropolitan Life Insurance Co.'s new computer center in Rensselaer, N.Y. The 212,000 sq-ft facility, which takes over from the company's current New York-based data center and will house systems and software development laboratories as well, will start out with 100 to 125 employees and staff up to some 225 over the next year. It also brings two particular strengths to Met Life's IS: dedicated disaster recovery capability to support the firm's three other data centers in Pennsylvania, Kansas and South Carolina, and proximity to a wealth of colleges and universities apt to provide a broad pool of technical talent.

The Federal National Mortgage Association, better known as Fannie Mae, elected Barbara B. Lang to the post of vice president of its corporate IS division. Lang, a 27-year IBM veteran, will manage the day-to-day administrative and control functions of the 600-person department and create systems aimed at placing the latest technologies at Fannie Mae's service.

Treasury Department's wild ride

IS personnel wrestle with massive 10-year, \$850 million network procurement plan

BY GARY H. ANTHES
CW STAFF

The U.S. Department of the Treasury is facing a management challenge about as daunting as one could imagine: a 10-year, \$850 million project to recast its communications systems, committing to a vendor partnership that will endure long after the technology originally chosen has become obsolete.

And, just to make the exercise a little more interesting, those managing the huge deal have 42 different constituencies to satisfy: executive management, systems management, and users at each of 14 Treasury bureaus, including the Internal Revenue Service (IRS), the U.S. Customs Service, the U.S. Mint and the Secret Service.

"I worry about it a lot," says Steven W. Broadbent, the Treasury Department's deputy assistant secretary for information systems. "I worry about the complexity of Treasury and the mission we're responsible for. We have everything from law enforcement to financing the public debt and a heck of a lot in between, and we're trying to meet those mission needs with a single network program."

Nevertheless, outside observers say the agency has taken extraordinary pains to minimize the project's inherent risks and has put together a procurement plan that could become a model for other large systems projects in the government.

The Treasury Department, which

will spend \$2.2 billion on IS this year, is now soliciting bids for the design, implementation and operation of a department-wide communications system, which will act as a utility to provide voice and data services to the bureaus.

The system will be managed by the agency's existing Federal Telecommu-

mercial enterprises to have taken a step back and looked at all the elements of technology — networking, applications, databases and so forth — and set up a strategic plan for all of them," says Francis Drasin, chairman and chief executive officer of Fairfax, Va.-based Network Management, Inc.

The TCS procurement moves away from the practice of issuing hundreds of pages of detailed hardware and software specifications, many of which are obsolete by the time the vendor delivers the goods.

Instead, the TCS request for proposals (RFP) lays out functional requirements and asks vendors to come up with solutions.

"It's an extremely open-ended, flexible structure," says Warren H. Suss, president of Warren H. Suss Associates, a federal market consultancy that is based in Jenkintown, Pa. "This is where the government has been trying to get to in its acquisition process. This is in some ways a model procurement."

While that approach has much merit, it also puts a significant burden on the procuring agency, says Larry Seidel, vice president and head of civilian government programs at American Management Systems, Inc. in Arlington, Va.

Evaluating a range of alternatives and gauging their price/performance trade-offs, Seidel said, is "much more difficult than just going down the checklist and saying, 'Does it meet the spec?'"

Continued on page 82

WANTED: Systems provider

The Treasury Department's briefcase-busting RFP — the table of contents alone runs 28 pages — contains provisions likely to make bidders on the \$850 million information systems overhaul sit up and take notice.

And Treasury hopes those terms will keep the winner — most likely a systems integrator teamed with a telecommunications carrier and a gaggle of subcontractors — on the tip of its technological toes for all 10 years of the resulting contract.

The RFP contains a "technology refreshment" clause, directing the contractor to propose "enhancements" aimed at lowering costs, improving service, adding functionality and boosting reliability of the network. The government reserves the right to demand demonstrations of the enhancements and to reject them for any reason.

In return, the contract for the Treasury Communications System will contain an incentive program that relates to the contractor fees based on cost savings and

other improvements made.

Each year, Treasury will put funds in a kitty expected to be between 1% and 3% of the estimated annual contract price. Payout of the pool depends on contractor performance in three basic areas:

- Contractor responsiveness: customer satisfaction, user support, maintenance effectiveness and 13 other subcategories.

- Network performance: network delay, availability and mean time to restore.

- Cost management: based on an index that compares contractor prices with comparable commercial services.

"In the traditional government contract, the only way the contractor can make money is to sell us something — a new service, a new box," says Steven W. Broadbent, deputy assistant secretary for IS. "Here, if the contractor works smarter, we will give them a bonus on an annual basis."

GARY H. ANTHES



Steve Task

ations System 2000 (FTS-2000) arrangement with Sprint Corp. (see story page 82).

Called the Treasury Communications System (TCS), it will succeed the Consolidated Data Network now managed by Computer Sciences Corp.

"They are one of the few — maybe 10 — government agencies or com-

Data centers get the halon out of there

But managers trying to replace the fire retardant are discovering the alternatives aren't so hot

BY GARY H. ANTHES
Circuit City

Halon's days may be numbered, but users are far from united in their search for a replacement for the computer room fire-fighting chemical.

"Some companies are saying, 'I'll just wait until the manufacturer comes and sells me an alternative,' but that may not happen," said Thomas Cortina, executive director of the Halon Alternatives Research Corp. "None of the candidate agents right now is a definite winner."

Du Pont Co., the largest producer of halon, recently said it will stop production of the controversial gas by the end of 1993 — one year earlier than it had previously promised. The firm

simultaneously announced the availability of FE-13, a halon alternative (CJW, July 20).

But the new halon-like alternatives are far from perfect. According to fire protection experts, drawbacks include high price, toxicity, poor performance, and risk of environmental damage.

Stan Slonick, product manager for fire suppression systems at Kidde-Fenwal, Inc. in Ashland, Mass., said halon systems converted to FE-13 use could retain their fire-detection components — typically about half of the system's overall cost.

However, Slonick added, the conversion would require completely new storage tanks and delivery components — parts

led to FE-13 use could retain their fire-detection components — typically about half of the system's overall cost.

However, Slonick added, the conversion would require completely new storage tanks and delivery components — parts

that cost about three times as much as halon equipment.

A halon system with automatic sprinklers for backup will remain in place at the Washington, D.C.-based Smithsonian Institution's main data center, fire protection engineer Robert Wilson said.

Any new systems, Wilson added, will use sprinklers only until a good halon alternative is found.

Two choices

In fact, Cortina said, most users are showing one of two responses to the federal moratorium on the production of halons and chlorofluorocarbons, which deplete the Earth's protective ozone layer: either doing nothing or falling back on tried-and-true means of protection such as automatic sprinklers and carbon-dioxide systems.

According to Paul Harris, sales vice president at Chicago-based Ascon Fire Systems, companies including The Boeing Co.,

Ford Motor Co., General Motors Corp., and Chrysler Corp. are actively phasing out their halon systems in favor of water sprinklers and/or carbon dioxide systems.

Harris said the companies are worried about accidental dis-

ACCORDING TO fire protection experts, drawbacks to halon alternatives include high price, toxicity, poor performance and risk of environmental damage.

charges and the possibility that the government could levy a stiff user tax on halons. A current sales tax on halon of 25 cents per pound will jump to \$26.50 on Jan. 1, 1994.

total confusion."

Broadbent says his staff told the bureau that they could avoid the headaches of managing their own networks by signing on to TCS as a utility.

In addition, Broadbent says he enticed the bureau — especially the smaller ones — with the promise of better prices and more services than they could effectively buy on their own.



Broadbent corals IS for Treasury Department

Shielded

Despite all the effort that has gone into defining requirements, building a consensus and structuring a deal cul-

lated to lead the vendor down the right path, Broadbent says he still feels handicapped by federal procurement regulations that say bid evaluation criteria must be objective and precise.

"For me, developing relationships is what defines the success of the program, not looking at that may bid evaluation criteria must be objective and precise."

Broadbent adds, "What I'd do differently if I didn't have all these procurement regulations is put a lot of [emphasis] on how comfortable I feel based on the future relationship."

Broadbent adds, "Are we trying to do too much? I'm convinced we're on the right path, but until we get there, we won't know."

Treasury Department's wild procurement ride

CONTINUED FROM PAGE 81

In addition to giving vendors more freedom to craft their own approaches, the RFP makes funds available each year to reward superior vendor performance (see story page 81).

"We'll be constantly challenging the integrator to do business more efficiently and effectively," says James J. Pyral,

director of Treasury's Office of Telecommunications Management.

If the vendor "can demonstrate ways to save the government money on a cost-per-packet or cost-per-user or some other basis—we'll return some of those savings," he says.

Not all of the agency's chal-

Treasury Communications System (TCS) at a glance

In the next decade, the U.S. Treasury Department plans a massive network overhaul

What and when...

Now:

- 50,000 users at 3,700 worldwide locations.

- Network traffic: 5.7G bytes a day.

By year 2000:

- 400,000 users.

- Network traffic: 700G bytes a day.

and how

The Treasury Department's environment:

- Proliferation of bureau-based LANs.
- Move to client/server computing.
- Huge growth in file transfer applications, driven by new tax systems.
- Explosion in laptop computers to serve 10,000 users who will require dial access to TCS.
- Growth in imaging applications for law enforcement.
- The TCS infrastructure will consist of three logical phases:
 - A private subnetwork dedicated to the Treasury's use.
 - An FT/STSO services subnetwork.
 - A commercial services subnetwork offering third-party services.

Source: U.S. Department of the Treasury

CW Chart: Michael Higgins

BOOK REVIEWS

Flexibility: The future of business

The Virtual Corporation
By William Davidow
and Michael Malone
HarperCollins Publishers,
\$23.00

Imagine a huge business enterprise where there are no middle managers; workers' job descriptions are intentionally vague and their daily activities are subject to constant change; and each day's products are individually customized in response to the orders placed the day before.

That is a rough picture of the "virtual corporation," as set forth in this well-written, emphatically argued book. The authors describe virtual products as those produced and customized more-or-less instantaneously in response to specific customer demands. They also describe the radical restructuring necessary for most American businesses to produce virtual products. The authors assert that such change will dictate the success of U.S. firms in the very near future.

Not surprisingly, the enabling forces behind all of this change is the dramatic rise of information processing power. The Virtual Corporation cites just-in-time inventory control, electronic data interchange and other technologies as contributors to the advent of the new, flexible structure of future businesses.

The book challenges information systems managers to think of their role in business re-engineering as a never-ending process.

Turn Signals are the Facial Expressions of Automobiles
By Donald Norman
Addison-Wesley Publishing Co., \$21.95

If you think about information systems all day long, why go home and read a book about IS? Give yourself a break and flip through *Turn Signals*.

The book is a sharp, humorous critique of the fables of design that surround us in everyday life. (Do you accidentally turn on the stereo instead of the VCR or television because you have three remote control units scattered in the living room?) The relevance to IS is this: Applications and systems designers will find that *Turn Signals* challenges their empathy for the needs of end users.

Turn Signals is a loose collection of the author's thoughts on a variety of topics. IS managers who want a useful book without all the network protocol acronyms should take a look.

Reviews by Derek Slater

Honing business skills can't hurt

Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is Max Messner, chairman and chief executive officer of Menlo Park, Calif.-based Robert Half International, Inc., which places information systems professionals in the U.S. and abroad.

Q I keep hearing that IS professionals need to develop their business skills to improve their career prospects. Yet as a programmer with some business experience than many of my colleagues, I have never encountered a prospective employer who cared about anything but my technical credentials.

A Why is this? You may be encountering this reaction because employers typically look for different skills as you move up the career ladder. As a programmer or programmer/analyst, your depth and breadth of technical knowledge are overwhelmingly the determining factors in your marketability.

On the other hand, if you advance to be a systems analyst, project leader or manager, your employer will most likely put a higher value on your overall industry knowledge as well as your specific business management and interpersonal skills.

Q I have three years' experience on a VM/CMS REXX programmer. I have some personal computer experience. In addition, I had Cobol in school and I had a class in C at

work, but I haven't had a chance to use it.

A Am I pigeonholed in my current position? Your knowledge of Cobol and mainframes is important. But the IS world is moving quickly toward newer technologies, such as cooperative processing, open systems, object-oriented coding and graphical user interfaces.

You should continue to learn OS/2 and C at work and concentrate on these newer technologies to stay current with IS trends.

FAST TRACK CAREER ADVICE FOR THE '90s

Q Can you tell me the best way to go about finding schools that teach fourth-generation language/SQL programming?

A I have a bachelor's degree in mathematics and computer science, but it was completed in the early 1970s, and at that time, I did a lot of Fortran programming.

As part of its computer science curriculum, almost every university offers courses in databases, languages and software construction. These fundamentals are the basis for 4GL/SQL programming.

Your Fortran programming

experience is very different from the structured coding, or "English-like," relational nature of 4GL/SQL, but the process of learning a language is similar and you should have very little trouble.

Q As a computer engineering student, I'd like to study Unix. I've tried several companies, but none prices a Unix in a student's price range. With Unix becoming so dominant in this field, I don't want to be left playing with DOS. What can I do?

A There are several ways to access Unix at minimal or no cost. One way is to approach a professor at your school and offer to help on a Unix-based project. You could also try volunteering at a local nonprofit association that has a Unix system. The group will appreciate your computer experience, and you'll get the chance you need to learn the system.

You can also look into computer clubs, public computer networks or electronic bulletin boards that list ways for an individual to learn new systems at low cost.

» We want to hear from you. Call your career questions in using the *Fast Track* line at (508) 826-6529 and have your MCI Mail to KDWYER or send them by fax to Kelly E. Dwyer at (508) 875-8931. Letters may be edited for brevity and clarity. If we use your question, we'll send you a gift.

TIP of the MONTH

What's the best way to make sure you understand user requirements?

» I go out on the road with users to see how they evaluate psychiatric units in hospitals. We have also started classes twice a month for junior analysts that focus on giving users what they want: being better listeners and communicators.

*Deborah Swank, systems analyst
Ohio Department of Mental Health, Columbus, Ohio*

» We have a written request procedure where users write out what they want. It's the only way we can keep track. These written requests allow for as much detail as the user knows. Then we make sure the user is requesting the right thing and that it's in line with our guidelines.

*Joe Woodhouse, systems analyst
John Deere Foundry, Waterloo, Iowa*

» You have to put yourself in the user's place. I go to their location and get them to brief me initially. You need to understand the process from the beginning to the end, so I pretend I'm a new employee and have them walk me through the process.

*Ricardo Marrero, systems analyst
Engineering Dept., St. Petersburg, Fla.*

» We have varying levels of user proficiency, so you have to get a feel for what level they're at when you're describing what you plan on using. What's comfortable for one person from an input standpoint may not be comfortable for another.

*Mark Hog, financial systems analyst
National Processing Co., Louisville, Ky.*

» Sometimes I'll draw a map for the user that shows the stages of development and how long each stage will take. I think it's very effective. Sometimes they agree, and when they don't, they draw their own diagram.

*Henry Grey, systems analyst and technical support
Nynex Information Resources
Systems Technology Department, New York*

Compiled by Kathleen A. Gou, a free-lance writer based in Bedford, Mass.

DATA PROCESSING

DRAC CONSULTING GROUP, INC.

Our dynamic, rapidly expanding Consulting Group, serving an expansive list of clients, currently seeks individuals with 2+ years consulting experience in:

- MSA - ABCL
- MSA - ABCL
- ACCLIS Data Package Rep
- AS400 Control
- DB2, PM C
- ADAS/PM 2

Call or write to:

DRAC, Inc.

1545 Peachtree Road, NE

Suite 1235, East Tower

Atlanta, GA 30329

(800) 711-1184 FAX (404) 252-3994

ATTN: Assoc. Personnel

PROFESSIONALS TRAINED WITH PROFESSIONALS

SYSTEMS PROFESSIONALS

Escape to Boise!!!

We are looking for Programmers/Analysts with the talent and ability to excel in the challenging and rewarding Computer Programming/Consulting Business, along with the opportunity to use - one of the BEST and most in-demand skills in the computer industry today - COBOL.

IBM MAINFRAMES with COBOL, FORCL, COBOL, NATURAL, MARK IV, IBM COBOL, COBOL, PL/1, and FORCL.

IBM 3090 with COBOL, POWERHOUSE, or COBOL.

IBM PC's with IBM, ORACLE, C, INFORM, and dBase III.

PLEASE SEND US YOUR RESUME!!!

As one of the fastest growing companies in the consulting field, we need an experienced, motivated, quality oriented individual to join our staff. If you are a computer professional, send us your resume to the professional opportunities listed below.

TELSTAR ASSOCIATES INC.
P.O. Box 1012 Boise, ID 83721

St. Thomas

Don't miss the opportunity to improve and expand your business! Network and strategize with owners and managers of leading computer contracting/consulting firms.

Oct. 14 - Oct. 17, 1992
Frenchman's Reef
Beach Resort

For more info, call:
(800) 880-1240

NACCB
National Association of Computer Consultants

HOGAN

PROGRAMMERS AND CONSULTANTS

NATOWNE PLACEMENT/CONSULTING CONTRACTS

813-530-0207
FAX 813-535-1401

PARRILL AND ASSOCIATES
PO BOX 187
LANSING, MI 48949

CALLING ALL EXPERTS
(IT TAKES ONE TO KNOW ONE)

Join the team that offers weekly pay, local and national assignments, income and retirement protection, an aggressive and innovative marketing program, flexibility and diversity. Our company is established and we're expanding. Join a leader! We have multiple openings for Contract Programmers and Software Engineers. Some of our positions are salaried and include an excellent benefit package.

- Software/Hardware Engineers
- Programmers/Analysts
- DBAs, SQL
- Systems Programmers
- Technical Writers
- Trainers

FT. LAUDERDALE
1701 W. Commercial Blvd.
Rt. 1, Lauderdale, FL 33309
(305) 720-0730
(305) 720-9688
800-866-5300

BOSTON
3 Newton Executive Park
Boston, MA 02452
1-800-878-8552 or
(617) 527-4300
(617) 888-3044
AS400 - RPG II and COBOL
FOCUS

UNION, Computer Development
UNION - INNOVATIONS
PARADISE, FOLDFOLK, POWER
BUILDER

WASHINGTON D.C.
1701 Connecticut Road
Greenbelt, MD 20770
1-800-444-3973
(202) 220-1022

San Jose
1500 DTC Parkway
San Jose, CA 95128
(408) 801-8111
(408) 843-0800
(408) 843-0804
800-466-0800

VAL VERDE TESTERS
PROGRAMMERS WITH VAL (PMS & LTRIO) BUL, C, IBM COBOL, CCL, DB2, TANDEN COBOL

Expert Opportunity Services



"...Computerworld's Campus Edition gives us the most direct contact with our target audience of computer and engineering graduates."

*- John Wilhite
Manager, Corporate College Relations
Hughes Aircraft Company*

Hughes Aircraft, the aerospace electronics giant, is a full products company involved in the research, development, manufacturing, and support of over 100 different technologies. With about 55,000 employees in Southern California, Arizona, and Colorado, Hughes provides 12,000 separate products, services, and functions to the defense, space-related, and commercial industries worldwide. Since John Wilhite's job as Manager, Corporate College Relations is to oversee the recruitment of the country's top technology graduates, he advertises in *Computerworld's Campus Recruitment Edition*.

"Every year, Hughes recruits somewhere between 250 and 300 new graduates. The mainstream of our hiring centers around students with engineering backgrounds. Generally about 75% of our student recruits are in the electrical, mechanical, and computer engineering fields. Another 20% or so have scientific backgrounds, primarily in computer science and physics. The balance of our recruiting, then, is for MBA graduates with strong orientation in MIS or CIS. With one advertisement in *Computerworld's Campus Edition*, we get unique reach to all three of our student audiences.

"During the past few years, computer engineering and computer science graduates have become an increasingly important part of our recruitment efforts. So we need a publication that not only targets the exact audience we're trying to reach but also delivers quality responses. Based on the recruitment success of our first advertisement, we know *Computerworld's Campus Edition* gives us the most direct contact with our target audience of computer and engineering graduates. It definitely generates quality re-

sponses from students with the right types of backgrounds."

"In addition to delivering advertising results, the issue's Annual Student Survey serves as an important research tool. Upon receiving data on how students typically view Hughes Aircraft, we felt we needed to strengthen our image in this area. For continued success in recruiting top technical talent, we find feedback like this invaluable.

"To be effective, it's essential that our recruitment advertisement appears in a quality publication that students will read. We know *Computerworld's Campus Edition*, with its meaningful content, will have a long shelf life. Clearly, it's a publication that students will take back to their rooms pass along to fellow students, and keep for future reference. That means our advertisement in *Computerworld's Campus Edition* keeps right on working long after the issue date.

"Again this October, we'll be relying on the cost-efficient reach of *Computerworld's Campus Edition* to take our recruitment message to engineering, computer, and business graduates at leading colleges and universities nationwide."

Computerworld's Campus Recruitment Edition. On October 31, 1992, this exclusive edition reaches 150,000 top students enrolled in America's top computer and engineering degree programs. It's an advertising vehicle that works for John Wilhite of Hughes Aircraft. And it's your best way to recruit America's best computer career students. For all the facts, call John Corrigan, Vice President/Advertising Director, at 800/343-6474 (in MA, 508/879-0700).

Your best way to recruit America's best computer career students ...

COMPUTERWORLD

INSIDE

COMPUTERWORLD

CAMPUS EDITION

COMPUTERWORLD

CAMPUS EDITION

1 800 343-6474

IN MA 508 879-0700

COMPUTER CAREERS

Reynolds Electrical & Engineering Co., Inc. is the largest prime contractor for the U.S. Department of Energy's Nevada Operations Office (DOE/NV). Your area of professional expertise in the following specialties are available in our Information Systems Department.

SENIOR SYSTEMS ANALYST/PROGRAMMER— VAX TECHNICAL SERVICES

Work Location: Las Vegas, Nevada

The position requires a bachelor's degree in MIS, Computer Science, related fields or equivalent experience. The individual being sought for this position will be assigned to work in the Technical Support Section of a data center. Candidates must have at least 3 years' experience in consulting with data center users, including computer system operations personnel and senior level Systems Analysts/Programmers who design and develop business and technical applications in a VAX/VMS computer environment. Applicable experience should include in-depth knowledge of the VMS operating system, layered product set, third party devices, and an understanding of VAX cluster configuration and control. Additional experience with Local Area Networks (NOVELL, DEC Pathworks) is a definite plus.

SENIOR SYSTEMS ANALYST/PROGRAMMER— APPLICATION DEVELOPMENT

Work Location: Las Vegas and Mercury, Nevada

These positions require a bachelor's degree in MIS, Computer Science, related fields or equivalent experience. Must have three or more years' experience with Digital Equipment Corporation (DEC) VAX/VMS, application development using FORTRAN or COBOL, and relational database technology. Should have good communication skills and a solid foundation in structured analysis/design and programming techniques. Knowledge of SmartStar 40L-2 and PC application development (FOXPRO, dBASE IV, LOTUS) is desirable.

EQUAL OPPORTUNITY EMPLOYER—M/F

Liberal Fringe Benefits • Replaces Held Confidential
Must be a U.S. Citizen • Drug/alcohol screening test required

SEND RESUMES TO: Trudie L. Rainey
Recruiting & Employment Administrator
Reynolds Electrical & Engineering Co., Inc.
Post Office Box 58521
Las Vegas, NV 89193
Tel: (702) 295-1900



YOUR CAREER ADVANCEMENT IS OUR PRIMARY FOCUS

DESIGNER CLIENT/SERVER
SYSTEMS CHARGE
C/C++/PASCAL C/C++
SAS/COBOL 4th DIMENSIONS
ORACLE
FOCUS TANDEN
INFORMIX TANDEN/INVS

WE SET THE STANDARD OF EXCELLENCE
Offering both Permanent Placement
and Contracting opportunities.

COMPUTERPEOPLE, Dept. 524

2500 Peachtree Road, Suite 200, Atlanta, GA 30329
2500 Peachtree Road, Suite 200, Atlanta, GA 30329
2500 Peachtree Road, Suite 200, Atlanta, GA 30329
2500 Peachtree Road, Suite 200, Atlanta, GA 30329



COMPUTERPEOPLE

J.D. Edwards Experience

We need J.D. Edwards (JDE) Payroll, CRM and CRMII experienced professionals only.

JDE is currently looking for individuals with computer skills and experience with the proper ability to work in an JDE environment. We are looking for individuals who are self-motivated, have a strong desire to learn, and are willing to work in a fast-paced environment.

We offer top salary and benefits to individuals who are self-motivated, have a strong desire to learn, and are willing to work in a fast-paced environment.

For more information, please call 800-333-3333 or 800-333-3333.

ComputerPeople, Dept. 524

ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

A late advertising close means you get quick response. Computerworld needs just 2 working days notice for your ad to appear in the next weekly issue!

In fact, when we receive your materials or faxed copy for your ad by 3 p.m. the Thursday before the Monday issue date, your ad will appear that Monday* (Space reservations closing date is the same time the previous day).

| Mon | Tue | Wed | Thu | Fri |
|------------|-----|-----|---------------------------|-----|
| | | | Space & Materials Close 1 | 2 |
| Issue Date | | | | |

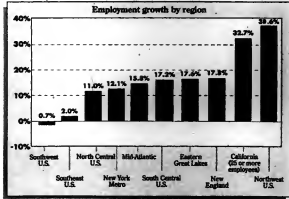
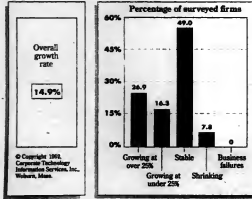
* Holiday changes may vary. Please call for details.

To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

COMPUTERWORLD
Where the qualified candidates look. Every week.

Computerworld/Corptech Career Index

Pharmaceuticals: Over 40% of the businesses are growing, nearly half are in the stable column, and there are no failures. Few industries have as much to boast about.



89

PRODUCT SHOWCASE



Complete Keyboard Customizing

Featuring: Custom Key Imprinting
Full Color Keyboard Templates
Keycap Overlays • Language Keyboards
P.O.S. Keys • Custom Keyboards
Training, productivity & marketing solutions!

Hooleon Corp. Free Catalog
RD. Box 236, Dept. COMW 800 937-1337
Corvillite, AZ 86325 Fax: 602 634-6620

TARGET SYSTEMS CORPORATION

TARGET-HOTLINE[™] HELP DESK AND CUSTOMER SERVICE SOLUTION

TARGET-HOTLINE[™] is the leading Open VMS[™] Help Desk and Customer Service software solution. This powerful, easy-to-use application helps you increase user productivity and deliver superior customer service.

TARGET SYSTEMS CORPORATION

33 Boston Post Road West, Marlboro, MA 01752 USA
800-333-3491 • 508-460-9206 • 9-E-Mail: INFO@TARGET.COM
FAX: 508-481-9187 Call today for a product evaluation!



ELECTRONIC COMPUTER GLOSSARY

Get the Word Out!

Spread COMPUTER LITERACY and INTERNAL STANDARDS to every PC user, beginner or expert. Start with our award-winning 5,000 definitions and DOS help. Add your own terms. Site licenses for DOS and Windows start at \$250. Everyone loves it!

The Computer Language Company Inc
5621 State Park Road 1-215-297-5999
Pitts Pleasant, PA 15050 Fax: 1-215-297-8424



Get Your PCs & Mainframe Speaking...Fast!

pcMAINFRAME[™] provides fast, flexible data transfer between PCs and mainframes in any IBM CICS environment.

FREE 30-DAY TRIAL!

cISoftware 800-368-8756
Circle 13, 119-824/1192



Bring 9-Track & 3480 Data To Your PCs

Our compact, light and powerful subsystems make it easy to interchange your data on 1/2 inch tape between your PCs, minis and mainframes. Choose from off-premise datafiles and operating systems. Products are backed by long experience and our comprehensive service and support program. Call for information and a free catalog.

OVERLAND DATA 800-859-8559
San Diego, CA TEL: 619-571-0555 FAX: 619-571-0982



GET SMART! MAKE PROFS EASY

SmartScreen, a graphical client for PROFS and OfficeVision, SmartScreen's fully iconic user interface automates access to your mail, calendars, and all other PROFS functions. SmartScreen also includes a full 3270 emulator that lets you access any host function.

Capella Systems, Inc. (404) 552-9910
1500 Riverchase Trail Suite 225 (800) 542-2577
Atlanta, GA 30306

4 COLOR PHOTO or Graphic

PREFERRED 4-COLOR MATERIAL: 4-color mag, silver, right reading, emulsion side down. Acceptable size (in order of preference to maintain optimum reproduction quality) are: 4-color transparencies; 35mm color slides; color photos.

If 4-color artwork is not available, Computerworld will accept Product Showcase advertisements in the design of appropriate graphics for their advertisements. Ad width: 3"; Ad Depth: 3 1/2"; Photo width: 2 3/4"; Photo depth: 1 3/4".

Name Of Your Product

Your product can appear here and will reach Computerworld's 629,204 readers. Place your message today.

ABC Company
123 Main Street
Anytown, USA 12345

1-800-XXX-XXXX

Place Your Product in COMPUTERWORLD'S PRODUCT SHOWCASE!

For just \$2,700, your product can appear 3 times in COMPUTERWORLD'S PRODUCT SHOWCASE. To place your message, or for more information, just fill out this form and fax it to: (800) 820-7739. Or place your advertisement by calling (800) 343-6474 (in MA, (508) 879-0700).

☐ I'd like more information

☐ I'd like my product to appear in the Product Showcase

Headline (approximately 1-6 words):

Text (approximately 3 medium length sentences):

Name of Company:

Address:

City, State, Zip:

Phone:

COMPUTERWORLD
PRODUCT SHOWCASE

(800) 343-6474
(in MA, (508) 879-0700)

MARKETPLACE

Haggling for fun and profit

BY DANIEL LYONS
SPECIAL TO U.S.

Even though he's buying computers with his employer's money, Carl Schwimmer negotiates as if he were paying for the equipment himself. "It's part of my nature to be a haggler," says Schwimmer, director of administrative services at the College of Business Administration at Northern Arizona University in Flagstaff.

"The worst thing a vendor can do is say no. I don't make it embarrassing, but I expect some kind of discount. If they don't come down, I walk away," he says.

Schwimmer is among those who believe it is almost always possible to get a better price on personal computers than what is advertised. Even discount shops will sweeten the deal if they're approached correctly, veteran haggler says.

Nonbargainers

Oddly enough, most people don't haggle at all, says Ed Sampa, purchasing manager at JEM Computers, Inc., a mail-order reseller in Boston. Others agree. Dianne Ford, president of Focal Corp., a

value-added reseller in Van Nuys, Calif., notes that 75% of the firm's customers accept the first proposal.

A buyer might not get a deal every time, "but it's a mistake not to ask," Sampa says.

The idea is to know what you want, approach the vendor as a potential partner and keep the tone light. But make the seller know you mean business without being arrogant.

"Playing hardball would have the opposite effect; it just turns them off," says Jim Ramsey, information systems manager at ATK Wire & Cable Co. in Danville, Ky. Ramsey has persuaded mail-order resellers to

cut prices on low-end PCs by buying in quantity. "If they're selling PCs at \$1,500, we'll offer to buy three for \$4,200, and usually they go with it," he says.

Working with the dealer gets much better results, Ford says. "If they say they like my product, my solution, but they've got a budget problem—OK, then I can deal with that," Ford says.

For the truly driven, the price cut can be substantial.

Delmar Epton, executive vice president of the operations group at First Alabama Bancshares in Montgomery, Ala., recently used

an updated version of the auction process to realize considerable savings on a used IBM 3090 Model 6000 mainframe.

Epton's first plan was to hold an open conference call with all interested vendors. However, resellers didn't want to be on the line together, so they replied by fax.

In less than six hours, Epton reviewed three rounds of bids, each time announcing the lowest price and asking vendors to beat it. "By 2:30 in the afternoon we were done, and we'd saved \$300,000 off the first-round best price," Epton says.

Epton advises potential buyers not to allow vendors to discover with configuration at all. "We told them we did not want them to muddy the water. We issued the specs and told them to bid on that," he says.

More bells and whistles

Hard-core negotiators acknowledge it is not always possible to get a cheaper price, but buyers can often get extra add-ons.

Schwimmer's most recent coup was persuading a Phoenix-based reseller from which he'd bought 10 PCs to loan him spin machines in case one of the 10 machines failed.

"They know that if things work out in six or seven months I'll buy those two spare PCs," Schwimmer says.

In fact, a vendor will be more likely to offer a deal if it thinks that will bring in more business

Tips for the true haggler

- Start bargaining from street price, not list price.
- Get prices from a variety of dealers and create competition among them.
- Focus on variables: monitor, keyboard, BIOS type, processor speed and hard disk size.
- Consider little-known brands over top-name brands.
- Make a habit of haggling.



CE Chart: Negotiation Tactics

later, resellers say.

However, no matter how good you are, the type of equipment you need will affect the discount. Savings from a PC deal amount to lunch money compared to costs cut from a mainframe deal.

Mike Baker, computer center manager at Avondale Mills, Inc. in Sylacauga, Ala., recently persuaded IBM to throw in 100 hours of free services with his purchase of an \$800,000 Enterprise System/9000 mainframe.

"With a company like IBM, they have a set discount rate, and you don't have a lot of leeway," Baker says. "But we got some free contract programming, and they also paid for the wiring of a UPS system."

Once a reseller feels it is dealing with a serious buyer, there are deals to be had, Ford says. But the watchword is flexibility.

For instance, you might want to consider little-known brands over name brands.

"Very often there is a substitute component that works just as well," says Robert Orbach, president of Orbach, Inc., a consulting firm in New York, and former director of business development at 47th Street Computer, a New York-based PC reseller.

Orbach also recommends that buyers forget list price. "The worst thing you can do is negotiate from list. You might get 40% off, but prices are changing so fast it might not mean much," he says. Your best bet is to negotiate from the street price.

One final tip from all those involved is to think of haggling as something enjoyable, not unpleasant.

"It's one of the fun things about any job," Schwimmer says. "And the resellers don't mind it a bit. The ones who deal with me a lot expect it."

Lyons is an Ann Arbor, Mich.-based free-lance writer.



WHEELING
& DEALING

Buy/Sell/Lease

WE BOUGHT IBM

By the Thousands

Computer Marketplace has bought and sold thousands of IBM systems, tape drives, disk drives, printers and peripherals. We are interested in offering top dollar for your RS/6000, System/6000, AS/400 or System/36.

SYSTEMS & PERIPHERALS

- RS/6000 System/6000
- Systems
- Memory & Features
- AS/400
- Network Solutions
- System/36
- P/52
- Controllers
- Disk Drives
- Tape Drives
- Memory Options
- Modems
- Displays
- Printers

BUY • SELL • RENT

3 OFFERS To Serve You!

COMPUTER

MARKETPLACE

(800) 856-1144

(714) 726-2100 FAX (714) 726-3717

250 East 5th Street, Corvallis, OR 97331

©1992 Computer Marketplace, Inc. All rights reserved. System/36 an IBM trademark.

DEMPSEY. WHERE IBM QUALITY IS SECOND NATURE.

- SERIES/1 BUY-LEASE-SELL
- P/370 Processors
- RS/6000 Peripherals
- INDUSTRIAL PC Upgrades
- ES/9000
- AS/400
- SYSTEM 36/38
- POINT OF SALE

For preselected equipment, flexible financing, configuration planning, technical support and overnight shipping call:

(800) 888-2000.



**Dempsey
BUSINESS SYSTEMS**

Where IBM Quality is Second Nature

1817 Beach Blvd., Suite 212, Huntington Beach, CA 92648 • (714) 671-4400 • FAX (714) 647-2100

IBM is a registered trademark of International Business Machines Corporation.

IBM

Authorized
Software Reseller
Integrator

REFURBISHED USED

- UPS SYSTEMS
- STANDBY GEN SETS
- LIBERT A/C
- ACCESS FLOORING

262 S. Military Trail
Oxnard Beach, FL 33442

1-800-226-0784
305-425-0638

We Will Buy AS-400 C-10's

Large quantities wanted thru all of 1992 for done deals. Call ASAP!!!
Mike Parazo or
Jim Moran
Combined Systems
Technology, Inc.
(515) 750-5300

Bids/Proposals/Real Estate

AUCTION

INDUSTRIAL HIGH
TECH BUILDINGAugust 12, 1992
2:00 PM On-SiteOff Route 95, Shelton, CT
To Purchase Computer Chip
Trading Facility28,000 sq. ft. Industrial
located in Rt. 95/101-97Serious Potential
Call for details!

(203) 775-4300

AUCTION
PROPERTIES, LTD.

RE • 800-698-17, 20 • 7 • 73

RE CAPITAL DATA
PROCESSING AUTHORITYDirect proposals will be received by
CPA, 201 N. Lenoir St., 303
Box, Suite 508 Jackson, MS39201 for the following:
RFP No. 2281, due Tue. 8/11/92
at 3:30 p.m. for MS-DOCS based486 evaluations for the mathe-
matical movement of CPA's
Tennessee Community Col-
lege. No chargeRFP No. 2282, due Tue. 8/11/92
at 3:30 p.m. for 20 microcomputers
and related peripheral equip-ment for the implementation of a
tax and network
Tennessee Community Col-
lege. No chargeRFP No. 2283, due Tue. 8/11/92
at 3:30 p.m. for the purchase
of LAN-based software to
implement an electronic, state and
federal tax filing system between
the IRS and the MS STATE TAX
COMMISSION. No chargeFor RFPs with no charge call Bill
Gibson at (601) 355-5504. The
CPA reserves the right to reject
any and all bids and proposals
and to award alternately.

FINALLY!

OUTSOURCING is made easier.

COMPUTER RESERVES will

- Nationally search for all mainframes.
- Match your exact specifications.
- Locate multiple OUTSOURCING sites.
- Negotiate the lowest price for you.

With 1200 placements in 24 years, CIR has
creative solutions at NO COST to you!
CALL DON SEIDEN

1 800 882-0968 NJ 201 882-9700

Time/Services

OUTSOURCING, REMOTE COMPUTING,
NETWORK MANAGEMENT SERVICES

- IBM MVS/XA Environment
- DB2, IMS/R, Model 204,
CICS and 4 GLS
- Professional Support Staff
- Experienced Migration
Management Team
- Flexible Charges. Custom
Solutions To Meet Your Needs
- AS/400, Asset
- Support Services
- Media Conversion
- Laser, LED & Impact Printing
- Application Programming
- Network Management Services
- LAN/WAN/MAN/SNA/PBX
- Technical Support
- 24 Hours Per Day
- 7 Days Per Week

May & Speh, Inc.

1501 Ocus Place - Downers Grove, IL 60515-5715

1-800-729-1501

For More Information Contact: Tony Ransen

Product Classified
PagesWhere
America's
Computer
Professionals
Shop

(800) 343-6474

(in MA, 508/879-0700)

REMOTE COMPUTING • OUTSOURCING

- MVS/XA
- CICS
- VM/370
- SPY/XA
- TRO
- CMS
- DB2
- IMS/DB2
- DL/I/VS

OVER 150 SOFTWARE PRODUCTS
• DEVELOPMENT • TESTING •
• PROSPECTIVITY • PERFORMANCE

- TELEMET
- SLIPNET
- YTHINK
- IBM INFORMATION NETWORK

INTERNETWORKING CAPABILITY SERVICE
MANAGEMENT SUPPORT

GIS INFORMATION

RESEARCH, INC.

New England
617-262-5999

Remote Computing

MVS and VM Environments

- Facilities Management
- Consulting & Programming Support
- Functional Outsourcing

Call us at 1-800-531-5489 for a flexible, cost-effective solution,
custom tailored to meet your needs.

Achieving Excellence in Customer Service for 25 Years

PRC

Growth Through Understanding

PRC, Inc., 1500 PRC Drive, Melrose, MA 02128

COMPUTERWORLD

Product Classified Pages
give you buyers with
extensive purchase influence.In fact, a full 95% are involved in purchase decision making
for their organizations. They determine needs, evaluate
technologies, identify solutions, and select products and
vendors for the entire range of information systems, as well
as related products and services.So if you're selling computer products and services, adver-
tise in the newspaper that delivers buyers with volume pur-
chasing influence. Advertise in *Computerworld's Product
Classified Pages!*

For more information, call

(800) 343-6474

(in MA, 508/879-0700)



COMPUTERWORLD

Where computer buyers and sellers alike. Easy sell.

ALICOMP, INC.

The "Boutique" of
the Computer
Services WorldVM, MVS, VSE
Outsourcing
Timesharing
ConsultingRemote and On Site
Serving Clients Since 1960

(212) 886-3600

A Division of
Automated Life

COMPUTERWORLD

Product Classified

Pages

delivers your
message in
companies that
plan to buy
your product
or service.From PCs to minis,
mainframes to super-
computers, Computer-
world's readers buy
products across all
ranges of today's
computers. So if
you're selling, adver-
tise in the newspaper
that delivers readers
that plan to buy
YOUR product or
service. Advertise in
Computerworld's
Product Classified
Pages!For more
information,
call:

(800)

343-6474

In MA, 508/879-0700

USE OUR TECHNOLOGY
TO YOUR FINANCIAL
ADVANTAGEHundreds of Large and
Small Companies Gain a
Competitive Advantage by
Using Comdisco's Nation-
wide Remote Computing,
Information Technology
Sourcing and Global Data,
Voice and Video Network.

Featuring:

- IBM® CPUs and Peripherals
- Full Range of Systems Software
- Database and Applications
Software Support
- Technical & Financial Planning
- Disaster Recovery
- Service Level Guarantees
- Capacity & Platform Transition
Planning
- Financial Asset Management

Call: Bob Marino

800-227-6584

COMDISCO®

COMDISCO COMPUTING
SERVICES CORP.20000 N. 10th Ave., Suite 100
Phoenix, AZ 85021

Now you have a better way to recruit university and college students planning computer careers:

Computerworld's fifth annual Campus Recruitment Edition

Issue Date: October 31, 1992

Close: September 18, 1992



If you recruit top computer career students on America's campuses, your message in this special issue will target more of them than any other newspaper or magazine!

Now you can recruit computer talent on campus without leaving your office!

That's because 150,000 copies of this special issue will be distributed to America's best and brightest students enrolled in Information Systems (IS), Computer Science, Computer Engineering, Electrical Engineering, and just about any other computer-related curricula.

Finally you can cost-effectively reach the quality and quantity of students you need!

And you can do it with just one ad in *Computerworld's Campus Recruitment Edition!* For a rate card reflecting complete campus distribution, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700). But hurry ... this issue closes September 18, 1992.

Planned Editorial Features:

(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Data Processing Management Association.
- And much more!

COMPUTER INDUSTRY

IN BRIEF DG suffers \$11.7M loss

■ As expected, Data General Corp. reported a fiscal third-quarter loss of \$11.7 million on a 14% drop in sales. There was a silver lining: Sales of Unix systems surpassed those of DG's proprietary lines for the first time — but not enough to overcome the Westboro, Mass., firm's second consecutive unprofitable quarter.

■ Belt-tightening measures at Tandem Computers, Inc. contributed to a 50% increase in fiscal third-quarter profits to \$17.4 million. Revenue at the Cupertino, Calif., firm climbed 5% to \$503.2 million from the comparable quarter last year.

■ Citing domestic growth in sales to domestic telecommunications, retail, gaming and travel customers, Stratat Computer, Inc. posted a second-quarter profit of \$13.5 million, up 28% from the year-earlier period. Revenue climbed 10% to \$117.4 million, the Marlboro, Mass., company said.

■ Blaming the "difficult global climate," Cray Research, Inc. reported that its second-quarter earnings declined 94% to \$1.2 million. Revenue dropped 6% to \$184.9 million for the period, the Eagan, Minn., firm said.

■ IBM Credit Corp. reported preliminary second-quarter earnings of \$52.7 million, up 26% from the comparable period last year. The Stamford, Conn., company said it originated financing for \$4.2 billion worth of equipment, software and services during the first half of the year.

■ Fiscal third-quarter profits at Comdisco, Inc. declined 36% to \$12 million. Revenue for Rosemont, Ill., lessor increased 9% to \$561 million, compared to the year-earlier period.

Q2 view: Early bird does catch worm

Software vendors that gambled on risky markets early cash in; latecomers lose out — for now

BY CHRISTOPHER LINQUIST
CW 1287

Second-quarter financials released by software developers last week were dominated by the "haves," much to the chagrin of the "have-nots."

Vendors that have established themselves in what were once considered risky markets, such as Microsoft Corp.'s Windows and relational databases, hit pay dirt, while those that only recently jumped in often found themselves floundering.

The situation could change during the next year, however. Analysts indicated that the Windows software market will become more competitive as more vendors enter it. And mainframe software vendors, several of which showed significant revenue gains, may be riding a temporary wave of upgrades as customers purchase larger, more powerful machines with an eye toward consolidating data centers — and software licenses.

And so it goes

The spate of quarterly financial reports issued last week broke down as follows:

■ **PC software:** The bottom line is still strong for several personal computer software vendors, especially those with a strong Windows presence such as the king of the Windows hill — Microsoft itself. The Redmond, Wash.-based company tempered strong net income gains of 52%, with a note of caution concerning future earnings, however, indicating that it is

simply getting too large to produce 50% yearly increases.

Analyst David Thomas at Prudential Securities, Inc. said increases of 33% to 35% would probably be more realistic for next year.

Pricing pressure in the Win-

dows market by a 16.3% revenue decrease compared with the same quarter last year, attributed in part to its inability to produce Windows products. Another possible cause is its tendency to flood the channel with products that are not selling.

— were not tremendous, though the firm's announcement a month ago of a less-than-optimal quarter drew some of the sting from the results.

■ **Mainframe software:** Computer Associates International, Inc., Legent Corp., BMC Software, Inc. and Platinum Technology, Inc. all showed strong quarters despite the continued shrinkage of the overall mainframe hardware market. Indeed, CA's 28% increase established a new high-water mark for the company.

"CA still continues to be the mainframe software company users love to hate," said Peter Burris, director of computer systems research at International Data Corp. in Framingham, Mass., "but they still realize they have trouble living without [CA]."

Legent also posted a record quarter, with overall revenue increases of 35%. Its international operations posted "dramatic" new sales growth.

The software contraction between shrinking numbers of mainframes and increased software sales is explained by several factors, including the increased acceptance of IBM's DB2 relational database; the subsequent demand for DB2-related software; and an increase in processing power per system as customers upgrade to more powerful mainframes, according to Thomas.

"The more speed you have in a system, the more management it needs, and that is totally a software issue," he said.

Second-quarter earnings 1992

| | Revenue April to June 1992 | Percent change from 1991 | Profit April to June 1992 | Percent change from 1991 |
|---------------------|----------------------------------|--------------------------------|---------------------------------|--------------------------------|
| BMC Software | \$50.5M | 30% | \$13.2M | 45% |
| Borland | \$114.8M | (16.3%) | \$1.7M | (85.5%) |
| CA | \$367.5M | 28% | \$19.3M | 45% |
| East | \$7.0M | 9% | \$1,585,000 | (150%) |
| Informa | \$60.3M | 51% | \$9.1M | 568% |
| Interleaf | \$28.5M | 26% | \$1.5M | 1,543% |
| Legent | \$69.9M | 35% | \$11.3M | 47% |
| Microsoft | \$815.4M | 55% | \$210.1M | 52% |
| Software Publishing | \$35.1M | 10% | \$679M | 5% |
| Sybase | \$57.8M | 59% | \$4.4M | 317% |
| Symantec | \$60.2M | 39% | \$6.4M | 66% |

CW Chart: Michael Thomas

dows market will increase as Borland International, Inc. finally releases its Windows products later this year and companies such as Lotus Development Corp. and WordPerfect Corp. push upgraded — and more competitive — versions of their Windows products out the door.

For now, however, Borland is the one that is suffering, as evi-

"The one thing that seems to be happening is that they've been stuffing the channel like Ashton-Tate used to do, and that's a real dangerous thing," said Jeff Tarter, editor of the "Softletter" newsletter. He added, "You're making product and not getting paid for it."

And Lotus' numbers — a net income increase of \$5.7 million

and mass market outlets by year's end — as a factor.

Although Pfeiffer would not disclose unit numbers, he claimed Compaq shipped "tens of thousands of the new products before the quarter closed."

Back orders build up

In fact, the company had such a strong demand that the products are currently backlogged, necessitating triple shifts at Compaq's manufacturing plants here and in Singapore and double shifts at its Scotland site.

Pfeiffer said that "although some machines should be out of backlog by the end of next month and others by September, everything from the June 15 announcement is on back order."

Analysts said that while the good news from Compaq is undoubtedly a plus, it is unclear

whether the company will remain in the black.

"I don't think it indicates a PC recovery," said Joe McGone, a principal at McGone & Co. in Westport, Conn. "The predictability of earnings is still in question because of the glut of PC vendors."

Analysts did agree that the new products have provided a much-needed boost for the ailing vendor.

"It's like Apple all over again — when Apple cut prices and rolled the Classic out, business boomed," said Bill Blumstein, an analyst at Forrester Research, Inc.

He added that Compaq's increased distribution channels and new pressure on component suppliers to provide discounts also played a role in the resurgence.

Restructuring pays off: Compaq profits up 15%

BY CAROL HILDEBRAND
CW 1288

HOUSTON — Severe cost-control measures and an avalanche of new product sales propelled Compaq Computer Corp. further along in its turnaround, as the personal computer giant posted second-quarter profits of \$29 million, an increase of 15% over the same period last year.

The company last week reported sales of \$827 million for the quarter ended June 30 — up 15% from the comparable period last year.

Rebounding from a year-long

restructuring process, the company has been working to save its market share from lower priced close makers while cutting its operating costs.

President and Chief Executive Officer Eckhard Pfeiffer attributed the resurgence to the company's mid-June price cut and product blitzkrieg, as well as the company's continued effort to cut expenses by reducing overhead and manufacturing costs.

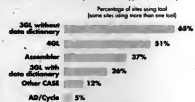
Pfeiffer also pinpointed the increased distribution levels — which will see Compaq products in more than 1,000 superstores

TRENDS

Application Development

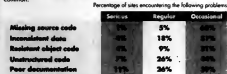
Tool mix

3GIs are used more than any other tool for application development.



Maintenance snafus

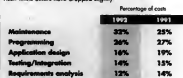
Inaccurate or missing documentation is the most troublesome problem when maintaining applications. Missing source code is the least serious, but it is more common.



Base: 953
Inaccurate or missing responses allowed; numbers have been rounded.

Life cycle costs

Maintenance accounts for 32% of the total lifetime cost of applications development. During the past year, this cost has risen while others have dropped slightly.



Source: Synopsi WPM, Ohio, Pa.

The newer development methods have not displaced older technology at mainframe sites, which still struggle with poor documentation and maintenance.

INSIDE LINES

In the mail

► Mail 3.0 is apparently on its way, although about a month late. Sources close to Microsoft confirmed that the company will go on a press tour to unveil the product sometime this week, with the official announcement probably occurring at GroupWare '92 next week. And Windows for Workgroups is apparently shaping up nicely, a source says. The peer-to-peer version of Windows reportedly includes an enhanced File Manager with toolbar access to features, dual redirectors for Windows to Windows, and Windows to Novell NetWare, the yet-to-be-released Schedule Plus group scheduling package and a subset of the Mail 3.0 user interface.

Losing its leaves

► Confirming long-circulating rumors, Banyan is talking to analysts and reporters this week about its plans to unbundle some of its networking services from its core Vines network operating system. The Westboro, Mass.-based vendor is expected to make utilities such as its highly acclaimed StreetTalk naming and directory service available for other LAN operating systems such as Novell's NetWare and Microsoft's LAN Manager.

Sabre rattling

► Asked last week what he considers to be his company's top competitor, Oracle Corporate Vice President Terry Garnett blurted out, "DEC," without any hesitation. "We're facing an illegal competitor there. They give product [Rdb] away with the hardware, and that's how they've gained market share," Garnett said. DEC is exhibiting the kind of bundling fervor last seen with IBM in the 1960s, adding that the Federal Trade Commission should investigate DEC. Will Oracle file papers to instigate such an investigation? "We're viewing that as an option," Garnett said.

Unconfirmed

► AMER Corp.'s Confirm automated reservation system remained stuck in a holding pattern last week at the Dallas-based airline holding company waited for three key investors to fish, or cut bait. Budget Rent A Car, Marriott and Hilton Hotels have until Friday to commit to Confirm or deal themselves out; as of late last week, they appeared to be taking their time.

No veiled threat

► Bellcore has threatened legal action against 2600 Magazine, a hacker publication in Middle Island, N.Y., that it claims published proprietary Bellcore internal information. Editor Emmanuel Goldstein won't say how he got the documents, which detail ways to remotely listen in on phone conversations, but he claims the publication is within its First Amendment rights to publish them.

Petri dish

► A disturbing new package that has popped up on virus bulletin boards is called the "Virus Creation Laboratory" (VCL) which includes a development environment written in Borland C++, well-written documentation and eight sample viruses. The VCL makes virus writing a matter of picking options from pull-down menus. Infection type, encryption, etc., can be selected, as well as a range of nasty effects. Experts say any beginning DOS user can create working viruses with this package. Although it isn't the first attempt at such a package, it appears to be the most user-friendly.

Pundits are still puzzling over what to call billionaire industrialist Ross Perot's withdrawal from his underdog presidential candidacy — but at least one spokesman at EDS' Dallas headquarters knows exactly what to call it: Sweet Freedom. "I'm having the best week I've had since the Perot campaign started," he exulted last week. "There have been whole days where just about all I've done is answer phone calls about Ross." The spotlight's glare may have given a particular headache to EDS, which has gone to great lengths to distance itself from its colorful but controversial Perot origins. Phone, fax or CompuServe Assistant News Editor Patricia Keefe with news tips at (800) 343-6474, (508) 875-8501 or 765372413, respectively. Or try CompuServe's 24-hour voice-mail tip line at (508) 829-8555.

NEXT WEEK

Shape up and ship out: Robert D. Kuniach, PHH's chairman, president and CEO, is spearheading the use of information technology to bridge the gap between the relocation and real estate sides of his \$4 billion Hunt Valley, Md., firm — and also to hone both businesses into nimble multinational competitors. See Manager's Journal.



Robert D. Kuniach

Software development is alive and well in the former Soviet Union, as In Depth reveals. The opportunities for U.S. companies are great. They can swap expertise in sales and marketing — areas in which Soviet developers are inexperienced — for access to inexpensive software engineering manpower skilled in PCs and object-oriented design.

Informix Database Technology Helps Hyatt Deliver The "Hyatt Touch."



When Hyatt Hotels and Resorts wanted to ensure their famous personal service, they turned to us, Informix, the experts in UNIX® relational database management systems.

Worldwide Reservation System.

Hyatt required a system that would support a large number of concurrent users and provide round-the-clock room information for all of their 160 hotels worldwide. They had to look beyond the existing mainframe for a more flexible, productive open system for future needs.

Hyatt chose Informix's UNIX database solution.

Replacing the Mainframe.

All of Hyatt's needs were easily met, including determining room availability, keeping internal reservations and independent travel agents connected, and automatically transferring room point-of-sale, restaurant activity, client accounts and automatic checkout into a central accounting system.

Hyatt and thousands of other companies have called on us for 12 years to successfully handle their critical data.

If you're considering UNIX for data management, talk to Informix.

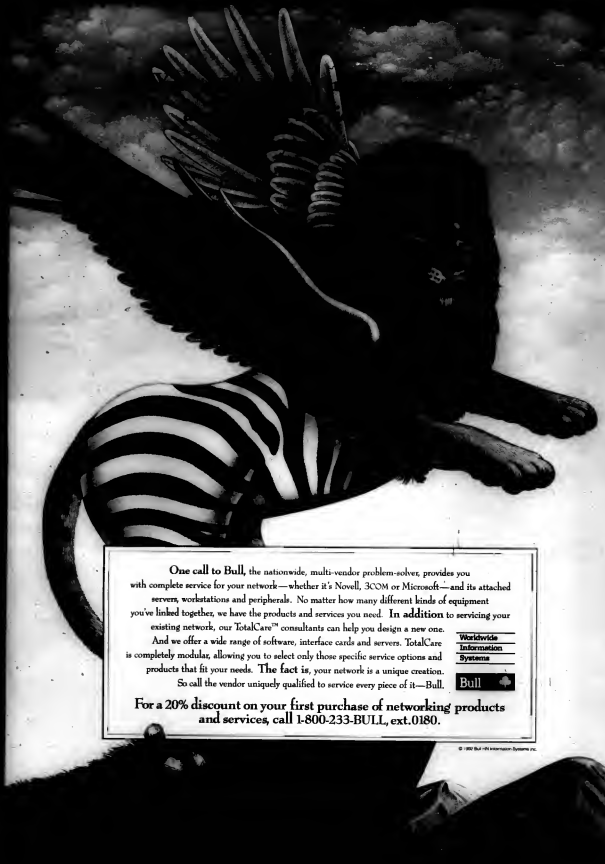
Because we're the experts.

Call 1-800-888-IFPMX.

INFORMIX®

THE UNIX DATABASE EXPERTS.

© 1992 Informix Software, Inc. Informix is a registered trademark of Informix Software, Inc.
All other names indicated by "®" or "™" are registered trademarks or trademarks of their respective manufacturers.



One call to Bull, the nationwide, multi-vendor problem-solver, provides you with complete service for your network—whether it's Novell, 3COM or Microsoft—and its attached servers, workstations and peripherals. No matter how many different kinds of equipment you've linked together, we have the products and services you need. In addition to servicing your existing network, our TotalCare™ consultants can help you design a new one.

And we offer a wide range of software, interface cards and servers. TotalCare is completely modular, allowing you to select only those specific service options and products that fit your needs. The fact is, your network is a unique creation.

So call the vendor uniquely qualified to service every piece of it—Bull.

For a 20% discount on your first purchase of networking products and services, call 1-800-233-BULL, ext.0180.

Worldwide
Information
Systems

Bull 

© 1989 Bull Information Systems Inc.